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MACKENZIE VALLEY PIPELINE INQUIRY

Government  
Publications

IN THE MATTER OF AN APPLICATION BY CANADIAN ARCTIC  
GAS PIPELINE LIMITED FOR A RIGHT-OF-WAY THAT MIGHT  
BE GRANTED ACROSS CROWN LANDS WITHIN THE YUKON  
TERRITORY AND THE NORTHWEST TERRITORIES FOR THE  
PURPOSE OF THE PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND  
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,  
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE  
PROPOSED PIPELINE

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

June 4, 1975.

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PROCEEDINGS AT INQUIRY

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VOLUME 48

CANADIAN ARCTIC  
GAS STUDY LTD.

JUN 17 1975

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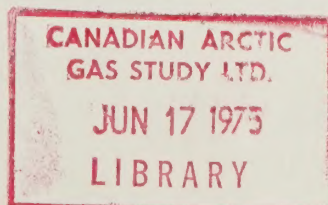




APPEARANCES:

Mr. Ian G. Scott, Q.C.	
Mr. Stephen T. Goudge,	
Mr. Alick Ryder and	
Mr. Ian Roland	for Mackenzie Valley Pipeline Inquiry;
Mr. Pierre Genest, Q.C.	
Mr. Jack Marshall,	
Mr. Darryl Carter, and	
Mr. John Steeves	for Canadian Arctic Gas Pipeline Limited;
Mr. Reginald Gibbs, Q.C.	
Mr. Alan Hollingworth	for Foothills Pipelines Ltd.;
Mr. Russell Anthony,	
Prof. Alastair Lucas	for Canadian Arctic Resources Committee;
Mr. Glen W. Bell and	
Mr. Gerry Sutton	for Northwest Territories Indian Brotherhood and Metis Association of the Northwest Territories;
Mr. John U. Bayly	for Inuit Tapirisat of Canada and the Committee for Original Peoples' Entitlement;
Mr. Ron Veale and	
Mr. Allen Lueck	for Yukon Native Brotherhood;
Mr. Carson H. Templeton	for Environment Protection Board;
Mr. David Reesor	for Northwest Territories Association of Municipalities
Mr. Murray Sigler	for Northwest Territories Chamber of Commerce

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Carson H. TEMPLETON  
K. ADAM  
L.C. BLISS  
Norman J. WILIMOVSKY  
D.W. CRAIK  
Ian McTAGGART-COWAN  
E. GOURDEAU  
- In Chief (continued)

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Templeton, Adam, Bliss,  
Wilimovsky, Craik, Gourdeau  
McTaggart-Cowan - In Chief

Yellowknife, N.W.T.

June 4, 1975.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. GOUDGE: Mr. Commissioner,  
if we could resume, I think Mr. Templeton and his  
group are prepared to carry on.

CARSON H. TEMPLETON  
K. ADAM,  
L.C. BLISS,  
NORMAN J. WILIMOVSKY,  
D.W. CRAIK,  
IAN McTAGGART-COWAN,  
E. GOURDEAU, resumed:

WITNESS TEMPLETON; Mr.  
Commissioner, we have discussed the environmental  
impact and yesterday we started on the existing  
framework of means of achieving environment protection  
and which will automatically lead up to our recommen-  
dations and the terms and conditions. We discussed  
the existing framework of the applicant and now we'd  
like to discuss the existing framework of government  
for controlling environmental matters, existing laws,  
regulations and enforcement, which will be given by  
Mr. Craik.

WITNESS CRAIK: Mr. Commissioner,  
I want to at this point look briefly at the existing  
laws, regulations and enforcement mechanisms available  
to government, and in doing so, to pose the question,  
"How adequate are laws, regulations and penalties of  
government to control avoidable environmental damage  
on this project?"

Before attempting to try and





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1  
2 answer the question, I want to first of all go through  
3 the logical process to see what laws, as enacted by  
4 the Legislative bodies might apply to the project, and  
5 then go on to the regulations falling under them. I'd  
6 like to list the different Acts, ordinances that apply  
7 just to get some idea of the spectrum that exists here.  
8 So if I might list these. First of all, the  
9 Archaeological Sites Ordinance.

10 Then the Arctic Waters Pollu-  
11 tion Prevention Act.  
12 Area Development Ordinance  
13 Canada Land Surveys Act  
14 Canada Shipping Act.  
15 Canada Water Act  
16 Clean Air Act  
17 Coastal Fisheries Protection Act  
18 Crown Liability Act  
19 Department of Indian Affairs & Northern Development Act  
20 Explosives Use Ordinance  
21 Excise Tax Act  
22 Fire Prevention Ordinance  
23 Fur Export Ordinance  
24 Fisheries Act  
25 Fisheries Development Act  
26 Fisheries Improvement Loans Act  
27 Fisheries Inspection Act  
28 Fisheries Prices Support Act  
29 Fisheries Research Board Act  
30 Forestry Development & Research Act





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Income Tax Act

International Rivers Improvement Act

Labour Standards Ordinance

Land Use Regulations

Migratory Birds Convention Act

National Harbours Act

National Parks Act

Navigable Waters Protection Act

Northern Canada Power Commission Act

Northern Inland Waters Act

Northern Territories Act

Ordinance Respecting Scientists & Explorers

Ordinance Respecting the Protection of Forests

Pesticide Ordinance

Pest Control Products Act.

Oil & Gas Protection & Conservation Act

Eastern Rocky Mountain Forest Conservation Act

Petroleum Products Ordinance

Territorial Lands Act

Whaling Convention Act

Yukon Act

Yukon Placer Mining Act

Yukon Quartz Mining Act

I think probably, sir, there are also others that would apply, and I read these simply to give a total picture of the number of pieces of legislation that one way or another could be called upon to apply to this particular project.

Our assessment of the present



Templeton, Adam, Bliss,  
Wilimovsky, Craik, Gourdeau,  
McTaggart-Cowan  
In Chief

1  
2 situation is this, that the existing laws and regulations  
3 pertaining to the environment come under so many Acts,  
4 Ordinances and jurisdictions, that although they may  
5 be adequate in a legal sense, it is unlikely that  
6 they would be practical in controlling an intense  
7 construction activity such as this pipeline project in  
8 the dispersion of responsibility of the Acts that  
9 presently exist.

10 Existing penalties for violation  
11 of regulations also do appear to be inadequate for the  
12 present level of land use activity.  
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Templeton, Adam, Bliss  
Wilimovsky, Craik,  
McTaggart-Cowan, Gourdeau  
In Chief

1                   The laws and regulations  
2     pertaining to environmental control are numerous,  
3     but their effectiveness is difficult to evaluate  
4     because many have been in force for a relatively  
5     short period of time. Most of those acts that I  
6     read there are quite old acts and                   the ones  
7     that apply most directly to environmental protection  
8     have evolved since about 1970. Three major  
9     difficulties are apparent from an informal review of  
10    the laws and regulations.

11                   First of all, enforcing the  
12    laws and regulations will probably cause jurisdictional  
13    problems within the Federal Government between the  
14    different departmental jurisdictions and then  
15    secondly between those Federal departments and the  
16    Territorial Government departments and their various  
17    agencies.

18                   And secondly, the adequacy of  
19    several existing laws and regulations to control pipeline  
20    operations seems to be questionable, since  
21    they appear to have been developed to control  
22    specific northern activities with levels of  
23    intensity far below those of pipeline construction.

24                   And thirdly, time constraints  
25    of the proposed Project are such that it is  
26    unlikely that new laws can be drafted and enforced in  
27    time to significantly control the proposed project.

28                   Now, it would appear that  
29    there is probably no difficulty in finding legislative  
30    authority in those acts to do the job that might be





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In Chief

1 required to draft up the necessary regulations and  
2 requirements and codes for this particular project.  
3 It doesn't appear to be a problem of getting the  
4 necessary authority through Parliament. The  
5 problem will manifest itself in actually being  
6 able to take that authority and effectively draft  
7 the necessary regulations soon enough and into a  
8 body that is effective to carry out those regulations  
9 in time enough for a project of this size.

10  
11 As I mentioned, there is  
12 a lot of authority in the acts that pre-date  
13 1970 and then there have been very specific legislative  
14 authority granted since 1970 by Parliament that  
15 are very specific to the environment.

16 As an example of the laws  
17 presently pertaining to the proposed development,  
18 consider the land use regulations. A literature  
19 review of the administration and enforcement of these  
20 regulations leads one to the conclusion that the  
21 land use regulations were devised particularly relative  
22 to seismic operations. One can't help but question  
23 the effectiveness of these regulations in the context  
24 of pipeline construction.

25 Another aspect illustrated  
26 by the history of the land use regulations is the length  
27 of time it took for them to be drafted into final  
28 form. There were around 20 different drafts and this was  
29 over a period of two years of preparation and they  
30 finally became effective in November of 1971. If  
specific pipeline regulations were to take the  
same length of time to prepare, assuming preparation





1 began now, then according to the applicant's  
2 construction schedule, some regulations would come  
3 into effect by the time the pipeline had already  
4 been half built.

5 The 1972 pipeline guidelines  
6 undoubtedly filled a major gap in the  
7 requirements that ought to apply to a northern pipeline  
8 application in the form of policies, regulations,  
9 permit conditions and specifications, but just as  
10 these guidelines consolidated broad issues the  
11 Board believes that a similar consolidation of  
12 environmental law and jurisdiction is required for  
13 the project.

14 The deterrent effect of  
15 laws and associated penalties is another  
16 matter of concern. Here the problem is one of  
17 determining which is the more effective deterrent to  
18 violations of an environmental nature -- is it the  
19 presence of a law or the threat of its penalty?  
20 Although difficult it is possible to gain some  
21 impression of the deterrent effect of penalties alone  
22 from a review of cases where only fines have been  
23 imposed. This can be done by comparing cost of repairing  
24 the damage to the cost of the fine.





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In Chief

A review of the penalties for violating the relatively new Land Use Regulations revealed that as of the end of 1971-72 season, there have been only two prosecutions and one conviction. The first case, which involved a quarrying operation near Hay River, was settled out of Court. However, the Department of Indian Affairs (DINA), withheld the operator's security bond pending satisfactory cleanup of the site. The only conviction resulting from the regulations involved the crossing of the tundra by a low ground pressure tractor. On May 16, 1972, the tractor operator was observed by the engineer and the chief land use inspector, who were flying north of Inuvik. The operator's defence was based on the contention that travel was covered by the permit of a major oil company. However, this permit had expired on May 7th. The operator pleaded guilty and was fined \$100 by the Justice of the Peace in Inuvik. An appeal by the Crown to the Supreme Court of the Northwest Territories resulted in the fine being increased to \$2,000. Only the company's good record prevented a maximum daily fine of \$5,000. Considering the tractor had already proceeded 67 miles before being intercepted suggests that the penalty imposed was probably light, too light to reflect the amount of damage or restoration cost.

There are several other cases resulting from 1972-73-74 operations that are under review by the Justice Department.



Templeton, Adam, Bliss,  
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In Chief

There appear to be few prosecutions of an environmental nature under other Acts or regulations pertaining to the Territories. But here too, the fines imposed have been somewhat light in our opinion. Violation of the Fisheries Act by a drilling contractor in not adequately cleaning up its Redstone River crossing in the spring of '72 resulted in a conviction. A fine of \$100 was imposed after the contractor had entered a plea of guilty.

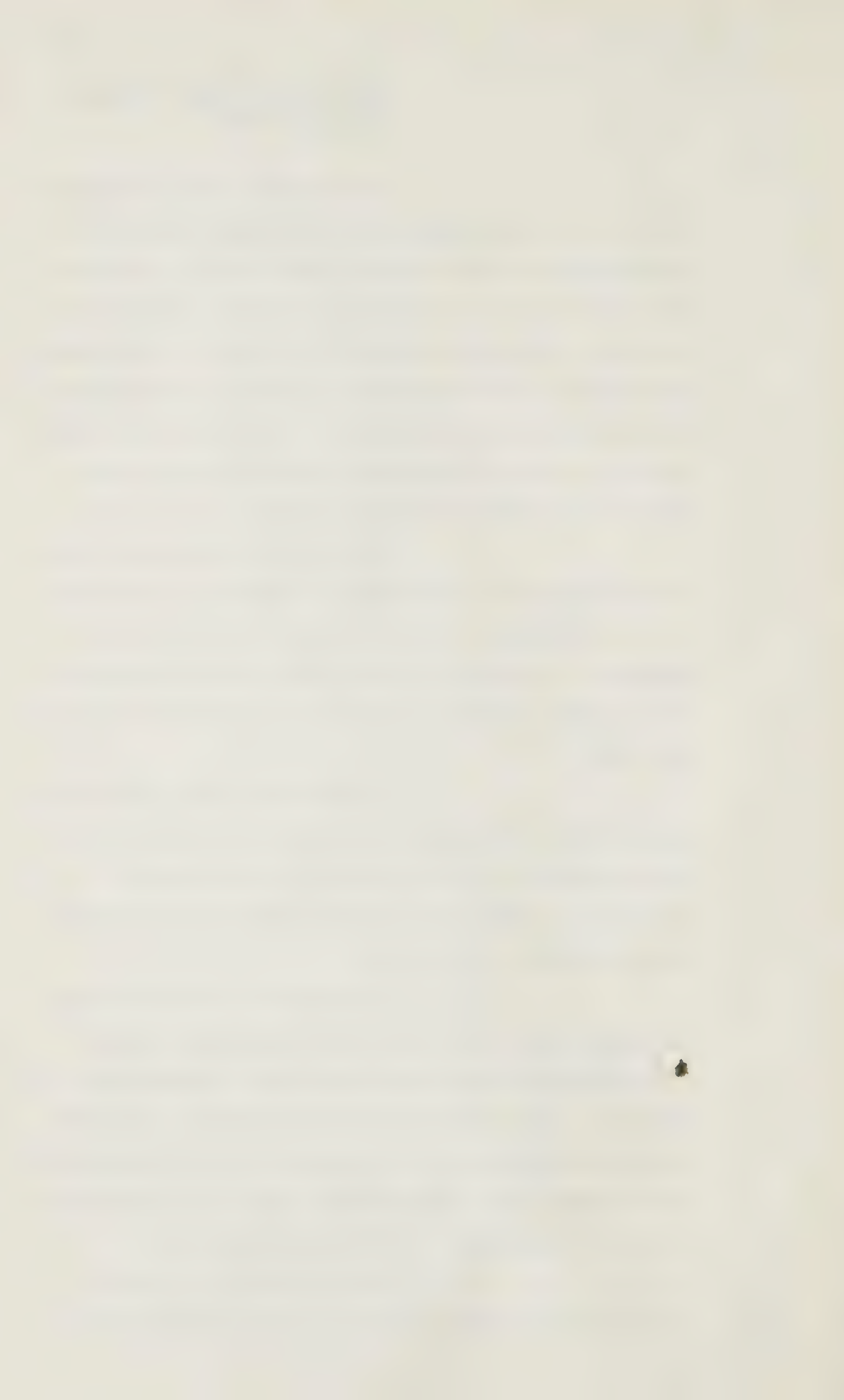
Our general assessment of the fines imposed for environmental offenses in the north is that a deterrent is not being achieved by the penalties. However, we don't know how much environmental damage has been avoided by the mere existence of the laws.

If adequate laws, regulations and penalties did exist to control this project, the next question is, "How capable are the present government mechanisms to ensure resolute enforcement to environment protection?"

Granting of a permit to the applicant will acknowledge that adequate planning and technology exists to successfully complete the proposal. But only resolute enforcement of adequate laws and regulations will guarantee proper performance of the applicant. Much of this concern relates to the framework of present government organization.

Now for example, at the present time the administration of the north by the





Templeton, Adam, Bliss,  
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McTaggart-Cowan  
In Chief

1  
2 Federal Government is primarily through the Department  
3 of Indian Affairs & Northern Development, and to a  
4 certain extent there is a potential conflict of  
5 responsibility within the department. That is Northern  
6 Development, environment protection, and the welfare  
7 of the native people all fall under this one depart-  
8 ment, and the Water, Forests & Lands Division, which has  
9 the responsibility to administer the pollution control  
10 and environmental Acts, is within the Northern Economic  
11 Branch. Paradoxically, the Department of the Environ-  
12 ment has very little defined <sup>enforcement</sup> responsibility within the  
13 Territories. On the other hand, it seems generally  
14 accepted that the Fisheries Act has been the most  
15 effectively enforced of all environmentally related  
16 laws, and this goes well back beyond 1970. It's  
17 a very old Act. This latter point is substantiated  
18 somewhat by a nation-side survey (including the  
19 Territories), prepared by the Environment Protection  
20 Service of Environment Canada, which indicates that  
21 from 1970 through 1972, that 51 convictions resulted  
22 from 55 prosecutions.

23 Our appraisal of the enforce-  
24 ment mechanisms of government is that there is not a  
25 single government department, not one single government  
26 department that presently exists that is capable of  
27 ensuring resolute enforcement of environment protection  
28 in the context of this particular project. Now this is  
29 not a criticism of the structure of these government  
30 departments in their normal operating procedures. We are





Templeton, Adam, Bliss,  
Wilimovsky, Craik, Gourdeau,  
McTaggart-Cowan  
In Chief

1  
2 relating our observations here to their capabilities  
3 in relation to this size of a project.

4 Now it's mainly because there  
5 is no single government department that has the breadth  
6 of authority or regulatory power, or sufficient numbers  
7 of trained personnel in one department to do the job.  
8 Several government departments with combined regulatory  
9 powers possibly could provide the legal authority and  
10 the required manpower, but administrative and juris-  
11 dictional problems in the field makes this alternative  
12 impractical.

13 THE COMMISSIONER: Excuse me,  
14 Mr. Craik, what makes it impractical?

15 A Well, primarily first of  
16 all that the regulatory power comes under Acts that  
17 span a large number of government departments, and  
18 then secondly, it's a question of not one department  
19 having a sufficient number and type of personnel to  
20 do this alone, as one department. We think that  
21 personnel has to be drawn from any number of government  
22 departments, and probably from outside as well.

23 Q I understand that. I  
24 thought that you were for a moment there considering  
25 a suggestion that the departments get together in  
26 some kind of combined authority, and then I thought  
27 you said that would be impractical; but I didn't -- I  
28 wasn't listening closely if I thought that.

29 A Well, our recommendation  
30 is that a single authority be created and it not



Templeton, Adam, Bliss,  
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McTaggart-Cowan  
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1  
2 necessarily be one department but be a special agency,  
3 but we do intend, sir, to deal with that this morning  
4 as we go along.

5 So if I implied that, I may  
6 have dropped a word and implied it, but the intention  
7 is here to emphasize that our feeling is, from what  
8 we've seen, that it shouldn't be attempted by one single  
9 present government department but should be a special  
10 group created for this particular project, that would  
11 then at the end of the project have a self-destruct  
12 mechanism that brought it to a painless end, and went  
13 back to normal, you know, responsibilities of the  
14 different government departments.





There are -- I would just like to say then finally on this section that there are forty or more basic laws in force enacted by Parliament that pertain to the pipeline project, or could pertain to it in one way or another and we think these have to be, the authority flowing from these have to be drawn together at some point, particularly on a project of this size.

Our opinion then finally is that the present framework of administration authority does not give any single government department the capability to adequately supervise construction of the project. The Board has therefore reached the conclusion that there is at present no

existing government mechanism by which the operations can be supervised in order to prevent avoidable environmental damage. That is all on that, sir.

THE COMMISSIONER: Thank you,  
sir.

WITNESS TEMPLETON:

A Mr. Commissioner,  
in continuing the existing framework we'd like to  
discuss the public role in this and Dr. Wilimovsky  
would present that.

WITNESS WILIMOVSKY:

A Mr. Commissioner, I would like to present a brief review of the existing framework for environmental protection for the public domain. My objective is to emphasize





1 the need for a continuing mechanism for such  
2 protection in all projects.

3 In Canada, there is no  
4 general formal mechanism for public scrutiny and  
5 assessment of the environmental impact of construction  
6 projects. Special hearings or inquiries are the  
7 mechanism that have been used for handling the  
8 specific situation the example of which is your  
9 present one.

10 Environmental impact  
11 statements are required on all major projects in  
12 some countries such as Sweden and the United  
13 States where a formalized reporting system and  
14 contest procedure have been established. They are  
15 not the same technique in these different countries.

16 Full exposition of  
17 alternatives considered by government, company and  
18 the people enables public awareness of the  
19 environmental, social, cultural and economic implications  
20 of a development. The public is always ready to  
21 discuss. An analysis of the problem suggests that  
22 the nature of such an appraisal depends in part on  
23 the accessibility of the base data, the method  
24 by which it is interpreted to and by the public  
25 and the extent to which the concerned parties  
26 believe that they have had an effect on the interaction.

27 The Board recognizes the  
28 difficulties of this task, in particular the  
29 proprietary nature of some of the data; the time  
30 and cost of converting some of the unedited or raw



1 data to report form, the problem of availability of  
2 expertise to interpret the data to the public, and  
3 finally, if I may plagiarize the title of Ambassador  
4 Harlan Cleveland's recent policy statement, the  
5 major question of how does one get everybody into  
6 the act and still get some action.

7 Public involvement has  
8 been high on this project because of an enlightened  
9 decision to encourage public input. It is not  
10 representative of the public involvement that  
11 has occurred on previous projects. The present  
12 situation is evidence that establishment of a  
13 positive communication link with public interest  
14 groups is possible.

15 The outcome of this  
16 public interaction on the project will be viewed  
17 with different degrees of success by interest groups.  
18 The Board's concern is to place on record the need  
19 for continuing information availability, safeguards  
20 and legal basis for such public inquiry and a  
21 follow through in public accountability as the  
22 project proceeds through construction, operation and  
23 abandonment.

24 To assure public accounta-  
25 bility as well as public scrutiny, our presentation  
26 will urge the formation of a formal independent  
27 body to carry out continuing assessment and public  
28 reporting of the environmental aspects of this  
29 project. Thank you, sir.

30 WITNESS TEMPLETON:





Templeton, Adam, Bliss  
Willimovsky, Craik  
McTaggart-Cowan, Gourdeau  
In Chief

1 A Mr. Commissioner,  
2 that concludes the section on the existing framework  
3 for environment protection and I would like to go  
4 on immediately to our recommendations and we have  
5 broken those down into the recommendations that  
6 we are making regarding the applicant and then  
7 the recommendations we make regarding government.

8 We will discuss the  
9 recommendations as to what the applicant must,  
10 in our opinion, do to achieve environment protection  
11 first, and I would like to very briefly introduce  
12 the subject.

13 For over four years now  
14 the applicant has undertaken and financed very  
15 extensive scientific studies. Besides the work  
16 of this Board numerous other consultant and  
17 teams of scientists and engineers funded by the  
18 applicant have conducted studies of the biotic  
19 and abiotic components of the environment in the  
20 western arctic. The applicant has testified that  
21 \$12 million has been spent on environmental  
22 studies alone. He stated that about \$42 million  
23 has been invested in all aspects of the project  
24 up until now.

25 But study of the  
26 components of the environment, their actions and  
27 interactions do not achieve environment protection.  
28 Knowledge of the arctic environment, and I might  
29 add that it is limited knowledge at that regardless  
30 of the amount of money and time that has been



Templeton, Adam, Bliss  
Wilimovsky, Craik  
McTaggart-Cowan, Gourdeau  
In Chief

1 on it, only serves as a basis for establishing  
2 administrative and procedural guidelines that can  
3 ensure environment protection.  
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Templeton, Adam, Bliss,  
Wilimovsky, Craik, Gourdeau,  
McTaggart-Cowan  
In Chief

Our general recommendations as to what the applicant must do to achieve environment protection are as follows. We consider that some of these recommendations represent the major necessary conditions under which the applicant's permit might be granted.

. We recommend that the applicant must first submit enough detailed plans which will demonstrate that it will protect the environment. Second.

. It will submit its formal program for environmental training of project personnel, and third.-

. It will supervise and be accountable for the environment protection measures through the same resident manager that supervises the engineering and economic aspects of the project.

Now I'd like to call on Dr. Wilimovsky to detail the recommendations of the applicant with regard to plans and specifications.

WITNESS WILIMOVSKY: Mr. Commissioner, as noted in our impact assessment, we recommended that the applicant table plans, specifications, and details of the means by which they plan to carry on environmental protection in the course of construction. We recognize that several steps in planning are involved, and that many of these must proceed in sequential fashion.

We further recognize that in addition to economic, time and technical reasons for this sequential planning, that there is the



Templeton, Adam, Bliss,  
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McTaggart-Cowan  
In Chief

1  
2 possibility for advances in the general state of the  
3 art, that is some plans, procedures, or contingency  
4 means might require complete revision because of new  
5 break-throughs in methods. Nevertheless, recognizing  
6 that plans and degree of detail will be changed as  
7 the project goes forward, the Board feels that the  
8 company's approach to the following environmental  
9 problems should be documented and tabled.

10 In his testimony of 3 June,  
11 Mr. Templeton reviewed them, so I only need mention the  
12 general subject areas.

13 Contingency plans indicating  
14 men and equipment available and plans of action to  
15 respond to the following types of fires: Fires started  
16 on and off the right-of-way during construction; fires  
17 started elsewhere and threatening the right-of-way and  
18 facilities, wharves, camps, etc. during the construc-  
19 tion and operation periods.

20 Contingency plans indicating  
21 men and equipment available and plans of action to  
22 respond, to contain and clean up spills of toxic materials  
23 at stockpile areas in winter and summer, and at wharves  
24 in summer and during their transport, especially to  
25 stockpile areas.

26 Contingency plans indicating  
27 men and equipment available and plans of action to  
28 respond to the following emergencies in summer: Rupture  
29 of pipe and project initiated slumping and massive  
30 erosion of river banks or hillsides. As detailed by





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McTaggart-Cowan  
In Chief

1  
2 Mr. Templeton, specific commitments are needed regarding  
3 aircraft restrictions, not only in their technical  
4 sense but the methodology by which these recommendations  
5 will be co-ordinated with Department of Transport and  
6 other regulatory authorities. It took several years  
7 to get the Noise Abatement Regulations through the  
8 various aircraft agencies.

9 Specific plans regarding water,  
10 means of disposal of pipe-testing fluids, and contingency  
11 plans regarding spills of pipe-testing fluid at all  
12 times of the year. The company has filed considerable  
13 material on snow roads, but we feel that there are a  
14 number of points that need elaboration such as if  
15 snow is insufficient to protect the surface, and other  
16 approved methods are not available; a major lack is  
17 the contingency plan indicating specific commitments  
18 to monitor and shut down operations, or to delay  
19 starting construction if you have a spring thaw warming  
20 coming early, or a late freezeup.

21 In summary, while we recognize  
22 the ephemeral nature of their detail, the Board urges  
23 that the afore-mentioned contingency plans be developed  
24 in more detail by the applicant for scrutiny.

25 WITNESS TEMPLETON: Now I would  
26 like to turn to the recommendations that we're making  
27 that the applicant perform regarding an environmental  
28 training program which will be given by Mr. Gourdeau.

29 WITNESS GOURDEAU: Mr. Com-  
30 missioner, the greatest threat to the environment along



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In Chief

1  
2 the proposed pipeline will come, we think, not from  
3 the pipeline itself, in all probability, but from the  
4 actual field procedures used to build it, field pro-  
5 cedures that are performed by project personnel.

6 The threat will become a reality in the form of unneces-  
7 sary and/or unacceptable environmental damage, if these  
8 personnel do not receive an appreciation and under-  
9 standing of the northern environment through effective  
10 environmental training programs.

11 Environmental training programs  
12 will not be, of course, a cure-all for preventing all  
13 the environmental damage. Effective environmental  
14 training programs permit, however, to reinforce in  
15 the minds of all project personnel an understanding  
16 and appreciation of the basis and reasons for the  
17 environmental protection regulations, specifications  
18 and operation procedures which they must follow. Such  
19 programs should enhance a worker's experience of the  
20 environment and introduce workers to the culture and  
21 life-styles of northern people.

22 In addition, they should  
23 provide a base of knowledge and understanding for  
24 making sound decisions on unforeseen environmental  
25 problems. Such unforeseen problems would most likely  
26 be encountered during surveys and confirmation activi-  
27 ties, between the approval of the application and the  
28 start of the mainline construction. Those groups of  
29 workers selecting and locating stockpile sites, camp-  
30 sites and wharves, or designating lakes or streams as sources of





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1  
2 water or sewage disposal sites would have to be aware  
3 of the year-around environmental implications of their  
4 actions. They would have to realize that some raptors  
5 use tall trees as nest sites. The prospective borrow  
6 sites could also be used by other raptors as nests, or  
7 by bears and foxes as denning sites, that some lakes or streams  
8 provide important or critical habitat for over-wintering  
9 of fish, beaver and muskrats, as well as summer use  
10 by waterfowl. All project personnel must then receive  
11 environmental training, not just those who will actually  
12 do the field construction work since they do not bear  
13 the entire burden for environmental protection.

14 The Board has divided these  
15 personnel into five categories, based on their  
16 potential for causing damage.

17 First category is the largest  
18 group. Included are the actual pipeline construction  
19 workers, their supervisors, and those involved in  
20 building camps, roads, stations and other pipeline  
21 facilities. Most mainline construction workers will  
22 have little opportunity to damage the environment, and  
23 as a result their training should deal with the general  
24 types of damage they could cause -- littering, starting  
25 fires, harassing wildlife. Workers involved in surveying  
26 clearing and grading activities will also need more  
27 specialized training, dealing with the disturbance of  
28 the terrain and water courses. Construction supervisory  
29 personnel will have the authority to make decisions in  
30 practice, and thus they have considerable potential for



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causing damage. Environmental training for these  
men and international support personnel, such as  
pilots and barge operators, should stress environmental  
regulations, specifications, and operating procedures  
and why they are needed.





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1 The second category are the  
2 supply and logistics teams. Staff in these  
3 positions will make such decisions as to when, where  
4 and how fuel caches should be transported and located  
5 -- decisions that demand an understanding of both  
6 the environment and environmental regulations.

7 The third category,  
8 senior and mid-management personnel. When the  
9 project is approved, if approved, mid-management will  
10 be faced with having to reschedule activities, maintain  
11 progress and plan for contingencies. Senior management  
12 will be working under pressure from contractors, finan-  
13 ciers, consultants, environmentalists,  
14 and government personnel. Environmental training will  
15 help both deal with environmental concerns and regulations  
16 in ways that will go far toward reducing environmental  
17 damage.

18 The fourth category consists  
19 of inspectors. Since they control both the quality of  
20 work on a spread and its rate of progress, their  
21 need for an environmental training program is  
22 apparent.

23 The operation and maintenance  
24 staff comprise the fifth category. Their duties will  
25 include such environmentally sensitive tasks as flying the  
26 line and performing emergency repairs year round. Their  
27 training program should be suitably thorough and  
28 continuous.

29 Each group should receive a  
30 training program related to the potential it has for



1 environmental damage. Thus, the training of those  
2 in positions to make decisions must be  
3 more intensive than that of the construction worker.

4 The development of environmental  
5 training program will neither be rapid nor simple.  
6 The first phase will involve identification of the various  
7 categories which need training, what their  
8 potential for damage is and the subjects which should  
9 be covered for each group. Once this general phase  
10 is completed, exact objectives should be determined  
11 and criteria established to test achievement of  
12 those objectives for each group. When education and  
13 language profiles of the various categories have  
14 been assessed, course content delivery strategy, training  
15 media, equipment, and instructor requirements  
16 can be determined. Finally, a master training  
17 document can be produced. We anticipate that this  
18 process of program development and execution for those  
19 involved in preliminary construction activities  
20 could take quite some time, maybe up to one year to  
21 complete.

22 The applicant has listed his  
23 guidelines for environmental training of  
24 project personnel in Section 14.d.N.6.1.1 in the  
25 exhibit number 58. We think that these environmental  
26 guidelines adopted by the applicant go in the  
27 right direction, but we don't think they have been  
28 expended enough -- they have expended enough in a de-  
29 tailed training program that anybody could judge their  
30 effectiveness in meeting the requirements, the





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1 environmental requirements. We recommend then that  
2 because of the importance of the education and  
3 training -- of the training -- environmental  
4 training, second to none in terms of environmental  
5 protection requirements that this more formal  
6 program be tabled before you for environmental training  
7 of Project personnel including a schedule and  
8 details about its implementation.

9 This completes our remarks on  
10 the environmental training. Now, I will go to  
11 environment protection as far as the applicant is  
12 concerned.

13 The applicant will have  
14 to supervise this project just as it would any  
15 major construction project with one significant  
16 difference. Environment protection measures will  
17 also have to be supervised and environmental regulations  
18 will have to be enforced.

19 On large scale engineering  
20 projects, project management generally oversees and  
21 supervises the progress of construction through a  
22 hierarchy of inspectors -- site inspectors, senior  
23 inspectors, chief inspectors -- who are ultimately under  
24 the direction of the Resident Manager for the total  
25 project. Inspectors at each level deal with different  
26 types of problems as they arise and supervise different  
27 aspects of the work. Site inspectors would generally  
28 deal with individual work crews, senior inspectors may  
29 be responsible for assessing the progress of one  
30 spread and chief inspectors may be responsible for



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1 several spreads.

2  
3 Traditionally, this project  
4 management organization is matched by a parallel  
5 structure in the contractor's organization where  
6 foremen would be responsible for the work of their  
7 crews, general foremen for the progress of several  
8 crews and site foremen for the spread.

9 Since site inspectors  
10 work closely with work crews, site specific problems  
11 can generally be resolved between the foremen and  
12 site inspectors. Difficult problems would require  
13 discussions at higher levels, perhaps between  
14 site engineers and senior or chief inspectors.

15 Thus far, we have dealt  
16 with the traditional structure of project supervision  
17 between project management and the contractors  
18 performing the work. However, if this project  
19 is approved, we believe that the traditional structure  
20 must be revised. The required revision would incorpor-  
21 ate environmental inspection personnel into the project  
22 supervision structure. Environmental inspectors would  
23 be retained by the Applicant and would be responsible  
24 for supervising all environmental aspects and  
25 environment protection measures on the project and for  
26 enforcing all environmental regulations pertaining  
27 to the project. Different levels of environmental in-  
28 inspectors would have supervision and inspection  
29 responsibilities ranging from responsibility for  
30 day-to-day activities such as ditching and snow road  
construction to major project components such as



1 river crossings.

2 In practice, the effectiveness  
3 of the role of the inspector would depend on their  
4 level of expertise.

5 The environmental inspectors  
6 would be responsible to senior project management  
7 through the same Resident MANager to whom the  
8 engineering inspectors are responsible. The Resident  
9 Manager will thus need to have an appreciation of the  
10 environmental protection aspects of the project such as  
11 he has an appreciation of its engineering and  
12 economicaspects, and to do this he needs the  
13 assistance of environmental specialists, both in the  
14 field and office, just as he needs the assistance  
15 of engineers in the field and office.

16 All three groups in the revised  
17 structure of project supervision, Project management  
18 and engineering inspectors, the project management  
19 and environmental inspectors and the contractors  
20 supervisory personnel will have to work together  
21 to make responsible decisons regarding the  
22 economic, engineering and environmental consequences  
23 of their actions in order to complete the project  
24 in the best way possible.

25 To give an example, making  
26 a decison on the best way to cross a small stream  
27 or river would involve not only the foreman and  
28 site inspector, but also the appropriate environmental  
29 inspector.

30 Factors to be considered





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1 Will include the usual evaluations of the physical  
2 dimensions of the valley, the limitations of the  
3 pipe bending, soil ice contents and the stability  
4 of the slopes after construction, along with the  
5 consequences of cutting into the bank, the effects  
6 of construction on water flow and the importance of  
7 the stream for fish, wildlife or waterfowl populations.  
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1  
2 In supervising this project,  
3 therefore, the applicant's top management must accept  
4 the responsibility for environment protection to the  
5 same degree as it accepts the responsibility for  
6 safety and integrity of the pipeline, and in the same  
7 way. The applicant must be made aware that financial  
8 and/or other penalties will be applied when it violates  
9 its responsibility to enforce environment protection  
10 measures.

11 In conclusion, we recommend  
12 that the applicant supervise and be accountable for the  
13 environment protection measures through the same  
14 resident manager that supervises the engineering and  
15 other requirements of the project.

16 WITNESS TEMPLETON: Mr. Commis-  
17 sioner, that concludes our recommendations on the  
18 applicant, the general recommendations. We'll come to  
19 more specific things later when we talk about the  
20 Environmental Code. I would like to turn now to our  
21 recommendations to government .

22 There has been considerable  
23 action by the government and there's still more that  
24 can be taken to prevent avoidable environmental damage  
25 in this project.

26 For years the Federal Govern-  
27 ment has issued permits for seismic exploration in the  
28 Western Arctic, and up to very recent times until  
29 seismic operations became restricted by environmental  
30 regulations, which we generally refer to as Land Use





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1  
2 Regulations, substantial environmental damage resulted  
3 from these activities. It was not until the late  
4 1960's that any real environmental guidelines have  
5 been issued by the Federal Government to control  
6 development activities in the north. The Land Use  
7 Regulations and the pipeline guidelines were written  
8 specifically for seismic work and pipeline development  
9 respectively. The Mackenzie Valley Highway fits  
10 neither. The manner in which the environmental matters  
11 related to the Mackenzie Valley Highway were handled,  
12 justifies our concern about the manner in which govern-  
13 ment forces might handle a pipeline project. The  
14 government has been pushing -- or perhaps that's not  
15 the right word -- has been developing the Mackenzie  
16 Highway through from both ends, and it is this facility  
17 that has established the Mackenzie Valley corridor.

18 Having established that, there  
19 will be a corridor, and established the location of  
20 the highway, the location of the gas pipeline must of  
21 necessity follow. No environmental impact statement  
22 was issued prior to or since the beginning of con-  
23 struction that I know of.

24 There are similar concerns  
25 that have led us to the following conclusions as to  
26 what the government must do to achieve environment  
27 protection.

28 1. Develop a land use plan for the Western Arctic.  
29 We believe there should be a land use plan for the  
30 whole Arctic and sub-Arctic, but for purposes of this



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1  
2 report we refer to the route along the pipeline as  
3 the Western Arctic.

4 2. Establish an environmental training program and  
5 inspection system.

6 3. Establish a single agency to control the project  
7 and to develop environmental specifications in the form  
8 of an Environmental Code.

9 After expanding on these  
10 recommendations individually, we have taken the liberty  
11 to examine what actions each recommendation entails.

12 I would like to call on Dr.  
13 Bliss to start the discussion of recommendations to  
14 government in regard to land use planning.

15 WITNESS BLISS: Mr. Commissioner,  
16 er, we have alluded to a land use plan over the past  
17 few days and I would now like to place this recommenda-  
18 tion before you.

19 We are convinced that a healthy  
20 and productive environment can be maintained in the  
21 north, but only if a land use plan is developed and  
22 enforced by the Federal Government in co-operation with  
23 the Yukon and Northwest Territorial Governments.

24 To many, land use planning  
25 would seem unnecessary in such a vast northern land  
26 where there are so few people, and with relatively little  
27 industrial development to date. Yet it is in these  
28 early stages of land occupation that long-term planning  
29 can be most helpful and easiest to apply. The land  
30 use planning process is well-established in our cities,



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1  
2 if not as effectively carried out in terms of social  
3 and environmental implications as we might desire.  
4 Based upon the experience of city planning, regional  
5 planning use is now under way in various parts of our  
6 country, including British Columbia, Alberta, Ontario  
7 and elsewhere. These plans may or may not include  
8 environmental components. We submit that now is the  
9 time to develop long-range plans for land use within  
10 the northern forests and Western Arctic before large  
11 as well as small tracts of land are committed to new  
12 use in a piece-meal and unco-ordinated manner.

13 Our analysis of the environ-  
14 mental impact of the proposed project has clearly shown  
15 that when considering large land areas, a given impact  
16 appears to be small, although when viewed on a local  
17 basis the impact may be devastating. This we have  
18 shown, I think, with the information on potentiality  
19 of destruction of what has been a good winter road  
20 come spring melt, slumping along the right-of-way,  
21 the destruction of a local wetland habitat for water-  
22 fowl. Therefore local impacts must be weighed more  
23 severely in regional planning because of their accumu-  
24 lative effects.

25 The Federal Government has  
26 recognized the need for at least limited land planning  
27 with the establishment of a Mackenzie Valley corridor  
28 in 1970. Our Board recommended in 1972 in a report  
29 entitled:

30 "Response to the expanded guidelines for





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northern land pipelines,"

which we submitted to the government, attached to our  
December, 1972, Newsletter. This is contained in Exhibit  
141 that's been tabled.

We stated that an inter-  
disciplinary study should be conducted along this  
corridor. We are not aware that such a study has been  
undertaken, although a highway is under construction,  
several hydro-electric power projects are being studied,  
and the Arctic Gas Pipeline application is being evalua-  
ted.

Based upon the presentations  
of the first week of these hearings, and subsequent  
presentations, including those of this Board, it is  
clear that the north is diverse in land forms, climate,  
biota, and its ability to accommodate people and in-  
dustrial development are rather limited.

Enough is now known of the  
potential areas for hydro-carbons, base metals, hydro-  
electric generation, harvestable wildlife resources, and  
the like, that a group of informed people could initiate  
realistic land use plans based upon a reasonable data  
base now. A considerable portion of that data base has  
been gathered in the last four years because of the  
expenditures, both of the applicant as well as the  
Federal Government. So we do not have to start at  
square 1 on this.

Land use planning needs to be  
done with the realization that while the north may be



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rich in fossil fuels, base metals and water, it is poor in its ability to support agriculture, forestry, and in general, people living off the land. The north is just not as productive in some of these things as areas to the south.

Planning needs to be severely -- to seriously consider the longevity of northern communities in terms of what will the people do when the minerals and hydro-carbons run out? Will people easily find alternative employment, or will towns boom only to bust with resultant southward migration of the people?

Planning that recognizes alternative land uses, optimal rather than maximal land and resource use, and planning predicated on an inter-disciplinary and systems approach will be far more acceptable to future generations than our current practices of tunnel vision and brush fire approach to specific problems.

Consider the recent history on plans for development. The anticipated removal of hydro-carbon resources from the Canadian northwest has already resulted in an increase in the activity in the area beyond that which was initially conceived. For example, the problems of transporting materials and providing services have activated road construction by the Department of Public Works, as well as railway studies by the Canadian National Railways. The increase in air traffic in the north will mean a





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1  
2 demand for more landing strips and better air terminal  
3 facilities as projects progress, and as electric  
4 demands increase, the Northern Canada Power Commission  
5 will probably expand transmission lines throughout the  
6 Mackenzie Valley. Hydro-electric development of the  
7 Great Bear River has recently been discussed as a  
8 future source of energy.  
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1 Ready sources of energy in  
2 the western Arctic will undoubtedly stimulate further  
3 development. New mines and lumbering operations can be  
4 anticipated. Such development is now taking place,  
5 even without utility energy sources. The local lumber  
6 mill at Wrigley and the placer mining operation on the  
7 Firth River are present examples of these trends.

8 Tourism and recreation demands  
9 are also increasing in the area as transportation and  
10 accommodation facilities improve.

11 If we provide recreation  
12 facilities and set aside tracts of land  
13 that are scenic and of biological interest will they  
14 be beyond the financial reach of most Canadians to visit  
15 them or will their use be limited to people who  
16 now reside in the north? How will this pipeline, if  
17 approved, influence recreation? Will areas be more  
18 accessible because of roads and airstrips and who  
19 will control these new avenues of access to previously  
20 pristine and isolated lands? What will be the impacts  
21 of development recreational areas on the environment?  
22 Will people who decide on where and when to establish  
23 wildlife refuges, national and provincial  
24 parks and ecological reserves do this in consultation  
25 with the groups pressuring for exploitation of minerals  
26 and other non-renewable resources. Will present and  
27 future roads be in conflict with wildlife management,  
28 especially the Dempster Highway and as Dr. McTaggart-  
29 Cowan pointed out, the annual migration of the  
30 Porcupine herd which frequently traverses this highway.



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1 Who and how will these problems be mediated. Many  
2 more examples could be given but this is sufficient to  
3 state the problem. Now, how can this be solved?

4 We recommend, sir, that  
5 an interdisciplinary group be established that would include  
6 representatives of the various participants engaged in  
7 current northern development, current land use  
8 practices including the native people, and those  
9 involved in planning as such, so that the  
10 diverse activities can be coordinated and a rational  
11 land use plan evolved that will then be implemented  
12 and enforced. Members of the Northern Land Use Planning  
13 Group must be recognized leaders in their respective  
14 fields of expertise and they must have sufficient time to  
15 devote to the development of long range plans so that  
16 the documents prepared for public hearings would  
17 stand intensive scrutiny prior to final decision .  
18 The planning group ( a multi-disciplinary group) should  
19 be financed by the Government of Canada and it should be  
20 responsive to the needs of government, <sup>of</sup> industry,  
21 of Northern municipalities and the public at large.  
22 We recommend that such a group be established now.  
23 We feel that a broad scale plan needs to be initiated  
24 and that a more detailed plan, or set of plans can  
25 then follow this.

26 You raised, sir, on Monday,  
27 the question of environmental impact of looping the gas  
28 pipeline and a separate question of an oil pipeline  
29 down the Mackenzie Valley. At this time, we have  
30 given only our separate impressions or opinions on





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1 individual environmental components of these added  
2 projects. These questions cannot be answered  
3 without first studying a project description and a  
4 construction plan. This is further emphasis for the  
5 need to establish a northern land use planning  
6 group now so that these questions and no doubt others  
7 soon to be raised can be studied and answered in  
8 light of an overall plan -- a plan that must deal  
9 with the conflicting land uses of, one, land in its  
10 natural state with its wildlife used by native  
11 people as well as desired to be observed by tourists.

12 Two, the need for national  
13 and territorial parks, wildlife refuges and  
14 ecological preserves.

15 Three, mining and hydro-  
16 electric development needs and,

17 Fourth, energy and transporta-  
18 tion corridors.

19 These and other land use  
20 plans need to be evaluated collectively now so that  
21 future generations cannot accuse us in the 1970's  
22 of having committed much of the Northern forest and  
23 western arctic lands on a piecemeal basis.

24 Thank you.

25 THE COMMISSIONER: Thank you  
26 very much, Dr. Bliss.

27 WITNESS TEMPLETON:

28 A To continue then with  
29 our recommendations to government, Mr. Gourdeau will  
30



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1 deal with the environmental training program and  
2 project supervision by government.

3 WITNESS GOURDEAU:

4 A Mr. Commissioner,  
5 earlier we discussed the training program which  
6 the applicant should be required to develop for  
7 all project personnel. However, the government should  
8 also be required, we believe, to set up an  
9 environmental training program so that  
10 government personnel can effectively supervise the  
11 project.

12 If the Application is approved,  
13 the government must have trained personnel able to oversee  
14 the whole project and capable to interpret and  
15 administer the environmental terms and conditions.  
16 Training of these government personnel will require  
17 the establishment of an effective and detailed  
18 environmental training program. This training program  
19 must be at least as rigorous as the one required  
20 of the Applicant and must emphasize an understanding  
21 of, and the reasons for implementing various environmental  
22 restrictions and specifications.

23 We see the formulation of this  
24 training program as a major responsibility of the new  
25 single Agency of the Government which we are recommending  
26 in our report and that Don Craik after me will explain.  
27 The Agency would be charged with securing staff from  
28 the various government departments which have  
29 jurisdiction, administrative responsibility or capability  
30 in environmental protection. The Federal Government





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1 currently has numerous employees who have years of  
2 technical inspection experience and some who have  
3 environmental inspection experience, while the  
4 Territorial governments have many land use inspectors  
5 with northern experience and several with environmental  
6 experience resulting from enforcement of the Land Use  
7 Regulations over the last few years.

8 What must be done now is to draw together the  
9 personnel required to establish and operate the environ-  
10 mental training program of the Government. This will be  
11 a major task and one which should result in a staff that  
12 represents a blend of engineers, ecologists, and ex-  
13 periented inspectors.

14 The training program should  
15 provide a detailed appreciation of the total project,  
16 the Environmental Code of the type which we are  
17 recommending, other laws and regulations  
18 relating to the project, the basics and techniques of  
19 good inspection procedures, safety guidelines and northern  
20 survival techniques. The program might well follow  
21 closely the applicant's training program for its  
22 environmental inspectors. But whatever its final form  
23 is, it should be mandatory, we believe, for all the  
24 personnel of the future agency expected to be associated  
25 with the project. We believe that the agency's  
26 environmental training program will determine in fact the  
27 adequacy of government inspection and supervision,  
28 both of which will play a major role in achieving en-  
29 vironment protection on the project.

30 In summary , we recommend that



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1 the government's regulatory agency plan and provide an  
2 environmental training program for all its staff.  
3 A program that will be focusing on the checking  
4 aspects of the environmental measures while the  
5 program of the applicant that we suggested before  
6 would focus mainly and principally on the carrying  
7 out environmental responsibility.

8 Thank you.

9 WITNESS TEMPLETON:

10 A Mr. Commissioner, before  
11 we go on to the -- describing the agency that  
12 we're recommending, I wonder if we could have a short  
13 break?

14 THE COMMISSIONER: Yes,  
15 certainly. We will break for a few minutes.

16  
17 (PROCEEDINGS ADJOURNED)  
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(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

WITNESS TEMPLETON: Mr.

Commissioner, we're continuing on our recommendations to government. We talked about the land use planning, the environmental training, and now Mr. Craik will discuss the agency that we feel should be set up.

THE COMMISSIONER: This is what Mr. Horte was waiting for, I think.

WITNESS CRAIK: Well, Mr.

Commissioner, just before I go into this agency concept, I want to point out that in my list of the Federal Government legislation, the Acts of Parliament that apply to this project, I probably missed one of the most important ones, which is the National Energy Board Act, which wasn't included in the list.

I want to now deal with the agency concept. Because of the magnitude of this job, the present diversity of authority for environmental protection, the scale and preparation and organization that would be required, and the critically timed construction periods, the complexity of all the problems involved, it is essential that before and during construction the project be supervised by a single temporary agency of government representing all major aspects of governmental interests, including environmental protection.

In the absence of a comprehensive plan for future land use in the vast and diverse areas that are to be traversed by this project,





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1  
2 the importance of an agency takes on a special  
3 importance, and I think that even under normal condi-  
4 tions where you were traversing areas where there were  
5 time-proven zoning and other environmental controls,  
6 you would still want a single authority representing  
7 governmental interests and including environmental  
8 controls; but it makes it even more important where  
9 you don't have these time-proven zoning and other  
10 environmental controls.

11 The Board visualizes that this  
12 government agency would have the authority and  
13 responsibility to enforce the existing federal,  
14 territorial, and local environmental regulations, as  
15 far as the project and the project personnel are  
16 concerned. The Board also visualizes that once  
17 construction is finished, the agency would be disbanded.  
18 Any further government administration of the project  
19 would be performed as a normal regulatory function of  
20 the departments of the Federal and Territorial  
21 Governments. Protecting the environment would be a  
22 major role of the agency, but not the only one.

23 The director of the agency  
24 should have the authority and responsibility to manage  
25 all governmental interests in the project, the same  
26 way that the pipeline company's resident manager should  
27 conduct all its operations, including environmental  
28 protection. In fact, each organization would have a  
29 somewhat similar hierarchy with a clearly defined  
30 means of inter-action.



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1  
2 The agency should be a vehicle  
3 by which inspection of construction and environmental  
4 protection are achieved. It should essentially avoid  
5 disturbing the traditional normal roles of the govern-  
6 ment departments. The agency should be able to obtain  
7 principally from government departments the key  
8 personnel it requires to supply the expertise and  
9 experience necessary that could administer the various  
10 regulations. The agency would be an administrative  
11 body duly established by law to enforce all the  
12 Statutes, regulations, laws, and an Environmental Code  
13 which we will discuss at some length later on.

14 The agency should be headed  
15 by a director responsible only to a designated Federal  
16 Cabinet Minister responsible for the agency. He would  
17 carry out his responsibilities through a number of  
18 authorized officers, authorized by the agency to  
19 exercise authority with respect to these Statutes,  
20 regulations and laws, and a Code; the authority to  
21 carry out day to day directions would be vested in  
22 site inspectors reporting to these authorized officers.  
23 We believe that the agency should approve all training  
24 programs such as those that were previously discussed  
25 by Mr. Gourdeau this morning.

26 We also believe that if  
27 necessary that the agency should be able to hold  
28 pertinent briefings of project personnel should  
29 unusual/circumstances arise that make that desirable.  
30 The agency or its authorized officers should at any



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1  
2 time be empowered to inspect the on-site activities  
3 in connection with the pipeline system. It should also  
4 be empowered to call upon the applicant to furnish at  
5 any time any or all data related to pre-construction,  
6 design, construction and commissioning activities in  
7 connection with the project. The agency would be  
8 empowered so that it may at any time suspend an  
9 activity of the applicant or its forces in connection  
10 with the pipeline system, which in its judgment  
11 threaten serious or irreparable harm to any life,  
12 element of the environment, or property.

13 The applicant would not  
14 assume -- the applicant would not resume suspended or  
15 terminated activities until it had been given authori-  
16 zation to do so by this agency. Any dispute arising  
17 under this arrangement would have to be referred to  
18 a referee, and it's always <sup>a</sup> difficult process to decide  
19 where the best place a dispute should go, but it  
20 would appear that probably the best place is to the  
21 Minister of the Federal Government responsible for this  
22 agency, and this is outlined in Volume 2, Section 71  
23 of our report.

24 It would be preferable if  
25 the agency organization paralleled that of the  
26 applicant's, so that levels of authority and respon-  
27 sibility of each party would be clearly matched. This  
28 would require that the applicant designate a represen-  
29 tative or representatives who would be empowered on  
30 behalf of the applicant to receive and comply with





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1  
2 decisions of this agency. AT the site level, the  
3 applicant would have site environmental co-ordinators  
4 to ensure that all activities were carried out in  
5 full compliance with the requirements.

6 Now I'd like to turn to the  
7 subject of how the agency would function, and at what  
8 points it would give its approvals. We see a number  
9 of steps in the approval process.

- 10 1. The approval of the preliminary design.  
11 2. A detailed working schedule  
12 3. A final design and issue of a notice to proceed.

13 Initially we see the applicant  
14 submitting the preliminary drawings for a segment of  
15 the line, and its other facilities -- roads, wharves,  
16 stations, communications sites, etc., to the author-  
17 ized officer of that segment. This information would  
18 include design criteria and environmental protection  
19 requirements, and so on.

20 Now before the final design  
21 is submitted, we envisage the applicant submitting for  
22 approval to the authorized officer -- incidentally, that  
23 first step, we would estimate would take about 180  
24 days of advance notice to allow the agency at this  
25 stage a maximum of 180 days to give consideration to  
26 that preliminary part.

27 Before the final design is  
28 submitted, we envisage the applicant submitting for  
29 approval to the authorized officer a summary work  
30 schedule analysis for the entire pipeline system.



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1  
2 The summary work schedule<sup>analysis</sup> now should be time-scaled  
3 and should include all activities, periods of the year  
4 when such activities are to be carried out, and con-  
5 tingencies which may reasonably be anticipated in  
6 connection with the pipeline system. The summary work  
7 schedule analysis should include

- 8 (a) Data collection activities  
9 (b) Submittal and approval activities  
10 (c) Pre-construction, construction and commissioning  
11 activities, and  
12 (d) Other pertinent data which in the opinion of the  
13 agency is required.

14 The summary work schedule  
15 analysis should be up-dated at regular intervals and  
16 no construction would be allowed without written  
17 authorization of the agency. On approval of the  
18 preliminary design for segments of the system, the  
19 applicant could then apply for a notice to proceed,

20 the final step, with construction of those  
21 segments for which preliminary approval had been  
22 obtained. Each application for a notice to proceed  
23 would be supported by first of all a final design  
24 comprising the completed design documents; secondly,  
25 all reports and results of environmental studies  
26 conducted or considered by the applicant; thirdly,  
27 all data necessary to demonstrate compliance with the  
28 terms and conditions of all applicable Federal,  
29 Territorial and local Statutes and regulations, and the  
30 Code. Fourthly, a detailed work schedule analysis



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1  
2 for the construction segment including schedules,  
3 permits required by the various jurisdictional  
4 authorities, and so on.

5 Finally, such other data as  
6 may be requested by the authorized officer, either  
7 before submission of the application for a notice to  
8 proceed, or at any time during the review period.  
9 This period, final period, we would estimate would  
10 require a period of up to 90 days for review by the  
11 agency.

12 Finally, before the agency  
13 issued its first notice to proceed, the applicant  
14 would be required to furnish the agency a surety  
15 bond on such terms and conditions as were acceptable  
16 to the agency in that particular geographical area in  
17 the principal amount of 1% of the capital cost of the  
18 appropriate segment of the pipeline system.

19 The bond would be maintained  
20 in force and effect in the full amount during the  
21 construction and commissioning of the pipeline system,  
22 and until released in writing by the agency.  
23  
24  
25  
26  
27  
28  
29  
30





1 Now, in addition to the  
2 formation of this agency, we believe the government  
3 regulations needed to ensure that environmental  
4 protection is achieved on the project would take  
5 the form of an Environmental Code patterned similar  
6 to volume II of our report. The code would  
7 bring together in one document the  
8 environmental regulations necessary to establish  
9 how work should be performed on the Project so  
10 that environment protection is achieved. It would  
11 be drafted specifically for this job since there is  
12 at present no code available which could cover  
13 all aspects of the Project.

14 In our opinion, it is  
15 impractical to expect the field personnel  
16 of both the pipeline company and the Government to  
17 achieve environmental protection unless guided by  
18 an environmental code. A code that establishes  
19 the minimum level of performance expected and how  
20 the code should be administered. It would comprise  
21 a series of explicit statements based on environmental  
22 regulations, the results of environmental studies  
23 informed  
24 and / opinions and the techniques of the pipeline  
25 industry clarifying the performance required on the  
26 project so that the environment would in fact be  
27 protected.

28 An environmental code would  
29 be particularly useful to both the applicant's  
30 field personnel and to the government's agency's  
personnel by setting out in one document the  
level of performance required of the Applicant



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1 and would spell out for the applicant how the  
2 government intends to achieve the performance. The  
3 pipeline industry is familiar with codes and the  
4 stipulation that an environmental code was to be  
5 used would be a practical way of introducing  
6 the new environmental dimension that is now needed  
7 in projects such as this project.

8 An Environmental  
9 Code should clarify existing laws and regulations  
10 for this project through specificity and detail, but  
11 should not supplant them. It would allow/<sup>for</sup>the  
12 insertion of new requirements during the project as  
13 new experience and knowledge dictated. It would  
14 be flexible enough for that purpose. But when construction  
15 of the project was completed, the Agency would not  
16 be needed any longer and therefore its dissolution should  
17 be a provision of its formation.

18 The code should set forth  
19 criteria for and standards of environment protection.  
20 It should establish the framework within which the  
21 pipeline company can prepare its plans and specs,  
22 and draw up sconstruction/supply contracts and order  
23 equipment. It should outline what performance  
24 is expected of project personnel in order that  
25 environment protection is achieved, and it  
26 should also clearly establish that this performance  
27 applies through every step of the process from planning  
28 and design through ultimate abandonment of the system.  
29 It should indicate what detail should be included in all  
30 the pipeline company's contracts for doing the work.



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In Chief

1 Enforcement of an  
2 Environmental Code before and during construction  
3 requires this single government agency of the type  
4 we outlined. As we said, this agency should  
5 administer all the environmental laws and regulations  
6 that are to apply.

7 I would like to emphasize  
8 that it is not just during the construction,  
9 but its existence is critical during the planning  
10 and design stages.

11 It is important for the  
12 reason that the enforcement process does not  
13 cause reversal of major decisions once the construction  
14 procedures are basically set out.

15 The proposed pipeline  
16 project is divided into sections and approvals  
17 to proceed with construction should be on this section by  
18 section or spread by spread basis or however you like  
19 to refer to it.

20 So, finally in conclusion  
21 then what we have said is that we are recommending  
22 that the government establish an environmental code  
23 specifically for this particular project as well  
24 as a single agency to administer this code and the  
25 other governmental requirements of the project.

26 Thank you, sir.

27 THE COMMISSIONER: Mr. Craik,  
28 would the jurisdiction of this new agency that you  
29 propose encompass the whole of the project or merely  
30 the project north of the 60th parallel?





A Well, our responsibility

When you get into the provinces of course you are dealing with different jurisdictional responsibilities where environmental matters are more in the fold of the administration of the province. In the territories the environmental matters are -- well, principally under the control at this point, for administrative purposes, under the Department of Indian Affairs and Northern Development. Once you move into the provinces, they are under specific provincial jurisdiction. The environmental legislation where it would appear, probably falls principally under the Department of the Environment, the administration falls into usually either a provincial government department or another federal department if you are north of 60, but it would still be desirable to have it apply as a single agency, but that would have to be arranged by negotiation with the provinces in that case.



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1 Q The suggestion  
2 you made that the agency should go out of existence  
3 when the project is competed implies that  
4 you do not agree with Mr. Horte that the National  
5 Energy Board would be the appropriate body to  
6 undertake this job?

7 A Well, it could be --  
8 if the Energy Board did it I would think that they  
9 could be the ministerial representative under which  
10 the agency was created, but I think if they did  
11 do it, what they would probably want to look at is  
12 drawing their personnel from other existing government  
13 departments both Federal and territorial and when  
14 the project was finished then they would really  
15 have no further, you know, reason to continue their  
16 existence and then go back to their original  
17 occupations. I wouldn't think that the NEB would,  
18 you know, have any good reason to want to continue  
19 a body of that size and scope unless it had another  
20 project going where it felt it would want to move  
21 them to.

22 Sir, we don't disagree with  
23 necessarily the energy department being that ministerial  
24 body.

25 Q Well, you didn't say,  
26 you said that the agency should be responsible to the  
27 Minister of the government of Canada. You didn't offer  
28 a preference.

29 A I think that there is --  
30 I should say that we discussed this briefly, you know,



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1 having arrived at this conclusion that there has to  
2 be first of all, it would appear that it has to be  
3 the Federal Government, secondly, that in the traditional  
4 procedures there then has to be a minister  
5 designated.

6 Q Oh, yes.

7 A The first offer by  
8 one of the Board members was that the minister in  
9 this particular case should be the first minister  
10 because of the importance of the environmental  
11 issue, but knowing that's not possible you then  
12 have to move on more practically to another minister  
13 and I don't think that we would have any hesitation  
14 about it being the energy minister.

15 Q The -- some people  
16 have said to this inquiry that it is anomolous  
17 that environmental matters in the territories are  
18 in many ways under the control of the Department of  
19 Indian Affairs and Northern Development and not the  
20 Department of the Environment. If Mr. Horte's proposal  
21 were to be followed or your own suggestion and I  
22 realize that you are not putting it forward as a  
23 hard and fast proposition, at least as I understand it,  
24 you're not, your own suggestion would move that  
25 responsibility over to the energy department.

26 I don't ask you to comment  
27 on that, but I am certain that somebody will before  
28 too many weeks have passed.

29 A Yes -- well, we felt  
30 it was important that all the governmental interests be





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McTaggart-Cowan, Gourdeau  
InChief

1 brought together and when you do that --

2  
3 Q Oh, I understand  
4 the force of that point.

5 A Yes.

6 Q That is -- taking  
7 that point along, Mr. Horte and the Board agree.  
8 And I wouldn't be at all surprised if the Canadian  
9 Arctic Resources Committee agrees.

10 A We think it is in the  
11 best interests of the environment too that there,  
12 you know, be good co-ordination of all governmental  
13 interests, including environmental -- and there are  
14 important things that come under the energy board  
15 that are important in the project: the standards of  
16 construction from a technical point of view.

17 Q Oh, yes, I see that,  
18 the reasons for it.

19 A I don't know if I am  
20 answering you specifically. I would just like to  
21 repeat, I don't think that we have any hesitation  
22 from an environmental point of view of this  
23 coming under the energy department.

24

25

26

27

28

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Templeton, Adam, Bliss,  
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In Chief

1  
2 THE COMMISSIONER: You were  
3 a Minister of the Crown in Manitoba, Mr. Craik. Leaving  
4 Ministers out of it, people who are in the public  
5 service sometimes object to any part of their juris-  
6 diction being surrendered to other departments or new  
7 agencies. It's always a problem. I headed a Royal  
8 Commission in British Columbia and we involved Civil  
9 Servants at every level in the work of the Commission  
10 and on issues of substance they were eloquent and  
11 helpful; on questions of departmental responsibility  
12 we ran into a lot of trouble and quite understandably.

13 Well, thank you.

14 A I think I  
15 probably avoided one, perhaps one question that you  
16 -- not purposely, but maybe you were looking for  
17 comments with regards to -- it was anomalous that  
18 the environment legislation was not being enforced  
19 in the Territories by the Department of Environment  
20 but rather by the Department of Indian Affairs &  
21 Northern Development, and I would have to agree that  
22 there is a lot of comment on this, and it is of some  
23 concern. I think that, you know, with experience in  
24 looking at the operations of government departments  
25 and knowing what their inflexibilities are, and  
26 recognizing that D.O.E. was only created about 1970,  
27 the year is approximate, but that would be about  
28 it, it was created at a time when environmental issues  
29 were very important and very key and which they still  
30 are, but at that time there was an urgency for



Templeton, Adam, Bliss,  
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1  
2 practical and political reasons to bring these all  
3 together under a department, and I don't think that  
4 the transition of power has taken place yet. I think  
5 it's probably logical that the Department of the  
6 Environment has to be granted more and more power.  
7 It's a case of the shifting of these powers from  
8 these departments to the Department of the Environment,  
9 and I'm sure that will happen, and I think probably  
10 it should. I'm sure that the Department of the  
11 Environmen t probably has my empathy because like  
12 my own present role is a member of an opposition,  
13 you play a watchdog role and you have no powers of  
14 enforcement or getting things done except to point out  
15 they should be done. They are very much in the same  
16 role at the present time. I'm sure that will change  
17 and probably for the better when it does happen, that  
18 they actually have powers of enforcement.

19 Q You are speaking of  
20 Manitoba at the moment?

21 A They have the powers  
22 of enforcement to go along with their watchdog role,  
23 where at the present time they can only point out  
24 difficulties without in many cases seeing that actions  
25 are taken to remedy them.

26 THE COMMISSIONER: Well, thank  
27 you very much. I just wanted your comment on that  
28 because some people have already brought these ques-  
29 tions forward. Well, Mr. Templeton?

30 WITNESS TEMPLETON: To continue





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1  
2 with our recommendations in general, I'd like Dr.  
3 Wilimovsky to discuss the recommendations regarding  
4 the public in the process.

5 WITNESS WILIMOVSKY: Mr.  
6 Commissioner, recommendations for environmental pro-  
7 tection for the public domain. The Board's philosophy  
8 of environmental protection demands independent objec-  
9 tive recording of the successes or failures of the  
10 endeavor to the public at large. Environmental protec-  
11 tion involves continuing public accountability. In  
12 this project public involvement, as was mentioned  
13 already, has been high. If this project continues,  
14 an environmental foster group independent of gover-  
15 nment and of the pipeline company and its contractors  
16 is needed to carry out the objectives previously  
17 enunciated.

18 The environmental auditor  
19 group should be completely independent, have few  
20 members with broad experience in the north, and publish  
21 its opinions frequently on the successes and the  
22 failures of environment protection. Such an auditor  
23 group will require adequate funding to operate, and the  
24 authority to move.

25 Sometime ago I was a member  
26 of an auditor group in which the sponsoring body, as  
27 well as the company, were very enthusiastic and  
28 co-operative; but when we were in the field at the  
29 time of the action, when we wished to check the  
30 environmental impact, no vehicle could be made available



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1  
2 for the team to see the operation. So this kind of  
3 authority has to be down at all levels.

4 The environmental auditor  
5 group should not be a substitute for or intrude on the  
6 role of government to supervise the project, but rather  
7 to provide an overview to the public. I would like to  
8 compare their role in the sense of the account and  
9 auditor system established in business. You can have  
10 the day by day accounting by man or machine, but at  
11 regular intervals it is necessary to audit the process.

12 Stated another way, the  
13 environmental auditor group would have no line function  
14 within the regulatory mechanism development. It  
15 is important to discuss inappropriate mechanisms utilized  
16 for environmental protection, and we have a history of  
17 some of these. It is important that we emphasize that  
18 the terms of reference for the auditor group are  
19 adequate and that these references be broad to allow  
20 full operation. An inappropriate or inadequately  
21 staffed auditor group could lead to uninformed assess-  
22 ments which could lead to misinformation or irrespon-  
23 sible reporting, which in turn could lead to a loss  
24 of confidence and failure of purpose.

25 In summary, repeating, we  
26 recommend that the public be kept informed about the  
27 proposed project through establishment of an environ-  
28 mental auditor group that is clearly independent of  
29 government and the pipeline company or its contractors.  
30



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WITNESS TEMPLETON: Mr.

Commissioner, that concludes the general recommendations to you, and we've mentioned many times the Environmental Code which contains the more specific recommendations, and I would like to turn to that now, and perhaps a word of introduction about codes and this code, and how it can be applied, and some of the worries we have regarding codes similar to, as Dr. Wilimovsky mentioned, regarding when he got to do his audit that there wasn't a vehicle available.

The Environment Protection Board believes that the proposed Mackenzie Gas Pipeline project should be regulated by an environmental code. We also recognize that to be effective, such a code must be adopted before the project is approved. Yet there is a strong possibility that if the applicant's proposal to construct the project is approved, the Department of Indian Affairs & Northern Development and the National Energy Board, and if the applicant's proposed work schedule is followed, there will not be time enough for regulatory agencies to draft and adopt a code before the project commences. We will talk about that concern later.

But to guard against this possibility, we have prepared an environmental code which we are about to present to you, tailored specifically to this project. We hope that with necessary modifications this code will be instrumental in achieving environmental protection on the project and





Templeton, Adam, Bliss,  
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1  
2 that it will eventually evolve into an environmental  
3 code for all pipelines in Northern Canada; but it's  
4 not meant for that at this time.

5 Perhaps a word is appropriate  
6 to distinguish between a code and environmental  
7 specifications. A code spells out only the performance  
8 expected. Plans and specifications spell out in  
9 detail the work to be undertaken.

10 I might read two very short  
11 paragraphs in the preface to our code, because I think  
12 the definition of "code" is perhaps different in dif-  
13 ferent people's minds. "This code is not to be taken  
14 as a complete handbook, nor the requirements contained  
15 in it to be considered as the only requirements neces-  
16 sary to provide the desired degree of environmental  
17 protection for construction operations in the Yukon  
18 and Northwest Territories. It does not obviate the  
19 need for highly skilled engineering judgment, and  
20 the close co-ordination of engineering functions with  
21 the input of plant and animal ecologists, resource  
22 management skills, and many other disciplines throughout  
23 the planning, execution, and commissioning process  
24 required for the pipeline system."

25  
26  
27  
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In Chief

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In the matter of

drafting codes it is difficult and time consuming and I would like to give you an example. In February 1975 we obtained from the Canadian Standards Association, Gas Code Committee, Z-184, a copy of a first draft of environmental guidelines for gas pipeline development put out by the ecological protection branch of the -- of the environmental protection service of the Department of Environment. These guidelines apply to all of Canada and not just the northern regions. The draft is dated December 1974. In this draft there are 210 paragraphs that are the same as this Board's environmental Code with one exception -- the substitution of the word "should" for "shall".

I would like to submit a draft of this environmental guideline for gas pipeline developments by the Ecological Protection Branch as an exhibit. We have marked up the copy by outlining in green the word "should" in the paragraphs where our code said "shall". Sentences which are identical with ours are underlined in red and our code paragraphs numbered shown in black opposite each underlined paragraph.

My comment does not have to do with the similarity of our code and the guidelines. We are pleased that they are similar. My comment is in two parts.

First, there is a need for specific orders or prohibitions, and second, there is time needed to prepare a detailed document.



Templeton, Adam, Bliss  
Wilimovsky, Craik  
Gourdeau, McTaggart-Cowan  
In Chief

1  
2 THE COMMISSIONER: A  
3 detailed what?

4 A Document.

5 I think it is taking me  
6 about two minutes to fire off my initials salvo  
7 on the words "shall" and "should". Think how  
8 long it will take to argue each of those 210 single  
9 word changes and there are many more insertions  
10 and deletions.

11 As a guideline, which the  
12 document is, the phraseology is quite proper and  
13 I am not in any criticising the author. He was  
14 writing a guideline and he wrote it correctly.  
15 What we are concerned about however, is that someone  
16 in a position of authority not familiar with codes  
17 and guidelines, might consider this nicely  
18 drafted government document as a satisfactory document  
19 for the protection of the northern environment and  
20 adopt those guidelines as the government's environmental  
21 code and then all the clauses with the word  
22 "should" become permissive and express hopes instead  
23 of terms and conditions.

24 We are of the opinion that  
25 unless the Government of Canada has clearly set out  
26 adequate regulations and has an agency staffed with  
27 trained technical people to administer the  
28 regulations, a considerable amount of degradation of  
29 the environment will occur. To us, unnecessary  
30 degradation caused by the lack of planning  
is unacceptable and the project should not proceed





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Gourdeau, McTaggart-Cowan  
In Chief

1 unless there are adequate controls

2 Our code which we will  
3 present now is not yet in its final form. It needs to be  
4 reviewed and revised by persons with  
5 skills and experience not available to the authors. It  
6 was prepared by the authors in consultation with  
7 13 engineers and ecologists and now it  
8 should be reviewed and amended by a broader - based  
9 group which would include, amongst others, pipeline  
10 experts and authorities on norther regulations. A  
11 word of warning is necessary, however. If a large  
12 committee were formed to review the code, it might  
13 act so slowly that major decisions on the project  
14 might be made, contracts let and work schedules es-  
15 tablished before the code was adopted. If this were  
16 allowed to happen the resulting code would be of  
17 limited value and the penalty for the delay would  
18 be environmental degradation. An environmental code  
19 must be adopted, administered, and enforced in the planning  
20 and design phases of a project, as well as in  
21 subsequent phases, if it is to be effective. In our  
22 view, threfore, it is better to accept an imperfect  
23 code than to begin without any code at all.

24 Briefly, the Code would apply  
25 as follows:

26 It would apply to the applicant  
27 his agents, contractors, sub-contractors, and all of  
28 their employees.

29 It would apply to all  
30 pipeline lands and the land areas required for



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1 compressor stations, storage tanks, construction  
2 campsites, material stockpiling sites, wharves, airports,  
3 landing strips, heliports, and similar facilities.  
4 It would extend to that area necessary for a site for  
5 each facility all as shown on the drawings, plans and maps  
6 filed with the Agency.

7 The requirements of the Code  
8 would apply to all activities of the applicant's forces  
9 associated with the initial studies, preliminary in-  
10 vestigations, route surveys and layout, field data  
11 acquisition, construction, and commissioning of  
12 the pipeline system or any portion of it. In addition it  
13 would apply to air travel of any type, surface travel  
14 by any vehicle or piece of construction equipment, the  
15 establishment, use and abandonment of campsites,  
16 the temporary or permanent location of any materials  
17 or equipment on land or in water, the clearing of any  
18 brush or timber, the excavating or grading of  
19 ground including disturbance or removal of any  
20 vegetation.

21 Under this Code the  
22 applicant has specific responsibilities which are  
23 set out in Sections 2.0 through 7.0. Some of these  
24 have been stated earlier. In addition, the Code  
25 requires the following: The applicant should  
26 apply for authorization to use or occupy any lands which  
27 are not granted by any land use agreement. The  
28 applicant should abate, whatever condition of the  
29 project causes harm or damage to the environment. The  
30 applicant should repair any damage done to the



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1 environment as a result of the project regardless of  
2 whose action or inaction caused the damage. The  
3 applicant should prohibit public access to all  
4 pipeline lands during construction and commissioning  
5 activities. The applicant should put in suitable  
6 permanent crossings for the public where the  
7 pipeline right-of-way or access cross existing roads,  
8 foot-trails, or other rights-of-way.

9 Finally, we believe it will  
10 be necessary to make provision for revising the  
11 code, because we are concerned that unforeseen conditions  
12 will arise during design, construction and  
13 commissioning periods of the pipeline system that will  
14 make it necessary to revise or amend the Code to pro-  
15 tect the environment. In that even, the applicant and  
16 the Government's authorized officer should agree  
17 as to what revisions or amendments should be made.  
18 If they are unable to agree, that Federal Cabinet  
19 Minister designated as responsible for the Agency should  
20 have<sup>the</sup> final authority to determine the matter.

21 Now, the other members of the  
22 Board will detail very specific environmental protection  
23 regulations that we propose under the 18 headings of  
24 the code. I will not introduce these. We will just  
25 pass from one to the other. I have a dozen copies of the  
26 code, if any people in the audience wish them they  
27 can pick them up here.

28 WITNESS GOURDEAU:

29 A Mr. Commissioner,  
30 Section 10 of our document, "Towards an Environmental





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1 Code", deals with the environmental training and  
2 briefing of staff. In our discussion of the  
3 existing regulatory framework we have pointed out  
4 that the applicant has made a definite commitment  
5 within its exhibit to provide an environmental  
6 education program for pipeline construction personnel  
7 from management through to the field worker. We  
8 stated also that unless the level of training is  
9 specified and unless such a program is initiated before  
10 the applicant starts, the training program is liable  
11 to be mediocre because of poor quality of content,  
12 probably, or because of insufficient time of  
13 exposure of the trainees, certainly.

14 In our presentation of  
15 impacts we have emphasized the potential danger of  
16 bringing some 8,000 men and 2,400 major pieces of  
17 equipment to previously undisturbed areas.

18 This danger can be reduced  
19 by the establishment of an environmental training pro-  
20 gram for all project staff. Such a program would be  
21 governed by several regulations. First, de-  
22 veloping programs before any activities start, second --  
23 ensuring that all project employees have a level of  
24 environmental training which reflects the potential  
25 of their position to cause environmental damage, and  
26 third -- emphasizing prevention of environmental damage  
27 as the primary goal of the program. The following  
28 code items spell out the regulations.  
29  
30



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Prior to the commencement of any activities on the pipeline site, the applicant shall develop environmental training programs which are geared to instruct and educate all project personnel in environmental protection.

All project employees shall receive a degree of training in environment protection.

The educational and training programs shall provide varying levels of training for various personnel involved with the pipeline project.

The level of training which each employee receives shall reflect the potential for environmental damage associated with fulfilling his or her responsibilities on the project.

During construction and commissioning of the pipeline, the applicant shall conduct frequent (not less than monthly) on-the-job upgrading training courses for all personnel to be on the pipeline project for the purpose of emphasizing the environmental protection requirements of existing federal and territorial regulations, and of the code.

Training programs shall emphasize the principle of prevention of environmental damage as their primary goal. They shall show that restoration is an acceptable alternative only when damage is absolutely unavoidable.

The applicant shall participate in regularly scheduled meetings which the agency will hold to evaluate the effectiveness of the



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1  
2 environmental protection and training plans. The  
3 agency may require modifications to training plans and  
4 these modifications shall be implemented by the appli-  
5 cant.

6 All training programs shall be  
7 subject to the approval of the agency. The programs  
8 shall be geared to:

9 (a) inform and educate all personnel of the special  
10 conditions of the area to which each is to be assigned,  
11 and the requirements of all applicable Statutes,  
12 regulations, and codes;

13 (b) instill in all personnel an appreciation of the  
14 environment and the desire for its protection and  
15 preservation;

16 (c) inform personnel of good conservation practices,  
17 to be adopted to protect the environment from damage  
18 which can result from a careless attitude in performing  
19 work and in day to day living in the area.

20 Should the agency require  
21 environmental and other pertinent briefings of pro-  
22 ject personnel, the applicant shall arrange these.  
23 The applicant must bear all costs of such briefings  
24 other than salary, subsistence, and travel costs of  
25 agency, federal or territorial employees. In other  
26 words, the code wants the agencies people, the govern-  
27 ment people, to remain free from the logistic services  
28 that the company said it would be ready to offer or  
29 to share. We think that they should be free in their  
30 movements and they should dispose of the necessary





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1  
2 logistics that they require to perform their role.

3 Monsier le commissaire, je  
4 vais maintenant parler D'Antiquites et De sites  
5 historique -- oh, excuse me.

6 (LAUGHTER)

7 THE COMMISSIONER: I was with  
8 you that far, but I don't know how much longer I could  
9 have stayed with you.

10 WITNESS GOURDEAU: Section 11  
11 of our code deals with antiquities and historical sites.  
12 In the presentation of impacts, we have stated that  
13 an unknown number of archaeological sites may be  
14 damaged or destroyed. However, this depends on the  
15 extent and effectiveness of the archaeological salvage  
16 program. We have shown that if an adequately staffed,  
17 well-planned and supported effort precedes and accom-  
18 panies appropriate project activities, and provided  
19 that archaeologists are given the authority to effect  
20 minor route and site relocations, the project will  
21 probably have a greater effect in the discovery of  
22 prehistoric evidence than negative effect in destroying  
23 it.

24 The construction of roads, the  
25 preparation of the right-of-way, trenching, the con-  
26 struction of compressor stations, air strips, communi-  
27 cation and stockpile sties, borrow pits, river crossings,  
28 and wharves are all activities which have the potential  
29 to destroy sites.

30 Protection of sites can be



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1  
2 accomplished by adequate enforcement of several  
3 regulations. First, engaging archaeologists to survey  
4 and inspect all pipeline project lands; second,  
5 giving them the power to stop work at sites of archaeo-  
6 logical interest; and third, requiring identification  
7 and collection of all items of archaeological value  
8 found by project personnel. The following code items  
9 spell out our proposed recommendations.

10 The applicant shall engage  
11 archaeologists to survey and inspect all of the  
12 pipeline project lands for archaeological values.

13 If project personnel encounter  
14 known or previously unknown animal or human remains or  
15 other historical sites and artifacts, they shall  
16 immediately cease any operation at such site and  
17 notify the agency and the archaeologists. The applicant's  
18 archaeologist shall investigate and provide an "on-the-  
19 ground" opinion regarding the protection measures to be  
20 undertaken by the applicant. The agency may suspend  
21 that portion of the applicant's operations necessary  
22 to preserve evidence pending investigation of the site.

23 The applicant shall file copies  
24 of all survey and excavation reports with the agency.

25 Should project personnel dis-  
26 cover any individual items or archaeological or histori-  
27 cal value during the course of the work, the applicant  
28 shall ensure such items are adequately identified by  
29 project personnel as to discovery location, date,  
30 and other pertinent data relating to the items. Such



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items shall immediately be remitted to the agency.

Time out. I've finished.

WITNESS BLISS: Mr. Commissioner,  
the next one is aesthetics. Section 12 of our code  
deals with aesthetics. In the presentation of impacts  
we have shown that one of the greatest impacts of  
the project will be a major invasion of wilderness  
which will gradually reduce the supply of land in its  
natural state. The pipeline will initiate this process  
in some areas, such as the coastal -- I'm sorry, the  
inland route, if this is chosen, and it will further  
have an impact on other areas such as the coastal  
route if that was chosen.

Impact aesthetics results,  
if the pipeline project lands are visible from roads,  
rivers, or lakes. Much of the original concern of  
gas exploration in the Mackenzie Delta region is  
centred on seismic lines because they were so visible  
from the air in an otherwise undisturbed land. To  
the average person, the greatest environmental impact  
of the project may be the scar on the landscape from  
burying of pipeline across previously undisturbed  
terrain. This impact can and will be greatly reduced  
because of re-vegetation which will enable the scars  
to blend more rapidly into the landscape.

Reduction of this impact can  
be accomplished by adequate enforcement of several  
regulations, Section 12 of the code, which may be  
paraphrased to say:





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1. 12.1 requires the applicant to consider aesthetic values during all phases of the pipeline project
2. 12.2 and 12.3 require screens of vegetation, trees and shrubs at highway crossings and around buildings and supply plants
3. 12.4 to provide buffer strips between the right-of-way, rivers and lakes.

WITNESS WILIMOVSKY: Mr. Chairman, provision for terms and conditions on fishing, hunting and trapping are contained in Section 13 of the Board's environmental code. The code requires that pipeline personnel shall not engage in any hunting, trapping, and camping on pipeline system land. Fishing is permitted only at designated sites. As Dr. Cowan noted in his statement of 3 June, 1975, the Board would now suggest modifying Section 3.1 to exempt access by the owner of a trapline known to territorial wildlife authorities to have been in regular use by the same owner for the three immediate preceding years. This section of the code, 13.1 to 3, and 13.9 covers the afore-mentioned concepts.

The code also requires that fishing data be collected at designated fishing sites, under code item 13.10. The remaining sections of this portion of the code pertain to the control and use of firearms.

WITNESS McTAGGART-COWAN: Mr. Commissioner, Section 14 of our code deals with the harrassment and disturbance of animals by equipment



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1  
2 and aircraft. We have shown that harrassment and  
3 disturbance is a concern to many groups of birds and  
4 mammals. Ducks, geese, raptorial birds, caribou,  
5 Dall sheep and grizzly bear are main examples.

6 Harrassment or serious dis-  
7 turbance affects physiological well-being of the animals  
8 and draws down their energy reserves. This in turn  
9 may effect survival, successful reproduction, and thus  
10 whole populations. In roadless areas of the north, air-  
11 craft are the most likely sources of harrassment. How-  
12 ever, boats and ground equipment, especially all-  
13 terrain vehicles, including the ubiquitous snowmobile  
14 have the potential to cause similar damage on a smaller  
15 scale. Protection from harrassment and disturbance  
16 can be accomplished by adequate enforcement of several  
17 regulations.

- 18 1. Prohibiting deliberate harrassment  
19 2. Limiting disturbance to pre-determined corridors  
20 3. In case of aircraft, keeping the flights at  
21 altitudes high enough not to disturb animals.

22 We have all travelled  
23 extensively in the north, Mr. Commissioner, and we are  
24 well aware of the problems posed by our altitude  
25 stipulations to conditions of flight during low cloud.  
26  
27  
28  
29  
30



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1 But we have addressed  
2 ourselves to environmentally necessary conditions.  
3 Other problems will have to be resolved later.

4 The harassment of birds  
5 and mammals by any equipment or aircraft shall not  
6 take place as spelled out by our code. If pilots  
7 employed by the applicant are proven guilty of  
8 this offense we suggest that they immediately be sus-  
9 pended from further flying for the applicant.  
10 Excepting traffic to established air terminals and  
11 traffic which crosses the river, aircraft traffic should  
12 be prohibited within two miles of the Mackenzie River  
13 between Camsell Bend and Inuvik during the month  
14 of May.

15 Routings across this restricted  
16 zone shall be at right angles to the river at  
17 minimum altitudes of 2000 feet and avoid river  
18 islands where at all possible.

19 Aircraft traffic over the Yukon  
20 coastal plain itself shall be prohibited from  
21 August 15 to October 15, the only exception is  
22 traffic to established air terminals.

23 Emergency traffic shall  
24 be restricted to flights of minimum elevations of  
25 5000 feet above ground or water level.

26 Aircraft traffic within  
27 two miles of the Yukon coast line and Herschel  
28 Island shall be prohibited between May 15 and  
29 October 1 except to established air terminals.

30 Aircraft shall maintain





1 minimum altitudes of 2000 feet over certain specified  
2 raptor nesting sites and shall be prohibited over  
3 known eyries of peregrine falcons and gyr falcons.  
4 We have included eagles and osprey because we are  
5 not aware of adequate data which would show that  
6 they should be omitted.

7 Aircraft shall maintain  
8 minimum altitudes of 500 feet where individual  
9 or small groups of caribou occur and at altitudes of  
10 2000 feet where migrating herds occur. The overflight  
11 of caribou herds during the month of July when they  
12 are under fly harassment should be prohibited.

13 Aircraft shall maintain a  
14 minimum altitude of 2000 feet where Dall Sheep occur.

15 Before any pipeline project  
16 activities start, the applicant shall establish aircraft  
17 flight corridors which avoid high density wildlife  
18 habitat or critical wetland habitat areas from  
19 May 15 to October 15 and have these approved by  
20 the agency.

21 Compressor stations where  
22 needed should be equipped with silencing equipment.

23 I turn next to zone and  
24 operations restrictions. Section 15 of our code  
25 deals with these restrictions. In our presentation  
26 of impacts, we showed how disturbing activities could  
27 affect nesting birds of certain species and other  
28 colonial nesters as well as the fall staging of  
29 snow geese along the Yukon coast. Also, how  
30 unregulated barge traffic within coastal lagoons



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1 of the Yukon coast could disturb to a serious degree  
2 moulting ducks and other species, and how alteration  
3 or loss of critical raptor nesting habitat could  
4 result from projected activities along the pipeline  
5 as projected.

6 There is some data and  
7 the basis for a strong inference that disturbing  
8 activities may affect calving or post-calving  
9 in migrating caribou herds and the Dall Sheep  
10 at all seasons. Protection of birds and mammals from  
11 disturbing activities can be accomplished by  
12 careful route selection and by adequate enforcement  
13 of several regulations which are contained in our  
14 section 15.

15 First, these involve planning  
16 and execution of all activities in working areas so  
17 as to avoid degradation or alteration of environment.

18 Second, by placing specific  
19 restrictions on terrain disturbance.

20 Third, by declaring certain  
21 areas off limits.

22 Fourth, by prohibiting  
23 disturbing activities in specific areas during specific  
24 periods of time.

25 And fifth, restricting operations  
26 to avoid interference with migrations.

27 Following environmental  
28 -- the following code items spell out our code  
29 recommendations. They also specify areas and times  
30 of year when applicable.



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1                   The applicant's activities  
2 in connection with construction and commissioning  
3 of the pipeline shall be restricted by the agency  
4 in key areas and at specific times.

5                   These restrictions and  
6 notices shall be provided to the applicant by  
7 the agency in writing. Additional restrictions  
8 may be imposed by the agency if, in its opinion  
9 such restrictions are necessary to protect the  
10 environment.

11                   The objective of imposed  
12 restrictions on preconstruction, construction and  
13 commissioning activities in connection with the  
14 pipeline is to avoid the problems that we have  
15 outlined above.

16                   All working areas, platforms,  
17 pads, roads, stockpile areas, camps and other facilities  
18 at any surface or sub-surface modifications shall  
19 be planned and executed in a manner that will avoid  
20 degradation and alteration of the environment.

21                   The following are  
22 specific restrictions.

23                   Project personnel shall  
24 not operate mobile ground equipment off the pipeline  
25 right-of-way, access roads, territorial or federal  
26 highways or other authorized areas unless the agency  
27 authorizes such use or such use as necessary to  
28 preserve life.

29                   Tundra, peat or other organic  
30 layers in permafrost areas outside the pipeline projected





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1 lands shall not be broken or otherwise disturbed.

2 C. There shall be no alteration  
3 of islands or bars in the Mackenzie River between  
4 Fort Norman and the Arctic Red River.

5 D. There shall be no alteration  
6 of existing spits, bars, barrier beaches or  
7 offshore islands on the Yukon coast without explicit  
8 permission of the authorizing officer in each  
9 instance.

10 E. No disturbing activities  
11 shall take place during the period March 1 to  
12 September 1 in areas within two miles of the winter  
13 range, lambing ground, or mineral lick of the  
14 Dall Sheep site, the denning sites of wolves and the  
15 nesting sites of the two falcons above mentioned.

16 F. Human access to gravel spits  
17 and offshore islands along the Yukon coast shall be  
18 prohibited for the period June 1 to September 1.

19 G. Structures shall not impede  
20 the movement of caribou, <sup>or</sup> moose or deflect the  
21 migrations of caribou or moose by more than two  
22 miles.

23 H. Marine traffic within two  
24 miles of the Yukon coast and Herschel Island shall  
25 be within authorized corridors at wharf sites.

26 I. Traffic on access roads  
27 shall be restricted during the month of July, if  
28 migrating caribou herds are within ten miles of  
29 such access roads.

30 J. Speed limits of 20 miles per



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1 hour shall apply to all vehicles on any access  
2 road when caribou are crossing or travelling such roads.

3 K. The applicant  
4 shall construct and maintain the pipeline to assure  
5 a free passage <sup>and</sup> / movement of big game animals.

6 **During** the construction period the applicant  
7 shall monitor caribou migrations to insure that the  
8 herds don't encounter open trenches and  
9 strung out pipe or operating construction spreads.

10 L. Refers to the need  
11 to restrict use of pesticides and herbicides, except  
12 with prior approval of the agency.

13 M. Refers to no activity  
14 in connection with pipeline projects shall be  
15 conducted within any designated **Federal**, territorial  
16 or municipal park, wildlife refuge, research natural  
17 area or similar site.

18 And finally, construction  
19 activities on the Yukon coastal plain shall be  
20 prohibited during the period August 15 to September 15.

21 WITNESS WILIMOVSKY:

22 A Mr. Commissioner,  
23 provisions for terms and conditions to protect  
24 fish habitats are contained in section 16 of the Borad's  
25 "Towards an Environmental Code". Section 16 -1  
26 refers to definition, the code requires protection of  
27 fish spawning beds and nursery areas and these pro-  
28 visions are contained in section 16 -6, 8 and 9.  
29 The code prohibits interference with movements  
30 of fish in water courses and is covered by provision



1 16 2, 3, 4 and 10. The code prohibits pipeline activi-  
2 ties from altering levels of suspended sediments, dissolved  
3 oxygen and other substances beyond the acceptable  
4 limits established by the regulatory agency.

5 Section 16 -5. The code prohibits the introduction  
6 of materials toxic to fish, such as lubricants,  
7 insecticides, test fluids, fuels and herbicides in  
8 the water courses.

9  
10 Go to item 16.11. The  
11 code requires documentation of water quality and  
12 fishing activities prior to pipeline construction  
13 activities. These would be company responsibilities.  
14 Code area 16.12. The need for standards development  
15 is mentioned in code item 16.13. This would  
16 be a government responsibility and it will require  
17 much work in advance of actual construction. Code  
18 Section 16.7 regulates the operation of equipment  
19 in water bodies.

20 WITNESS BLISS:

21 A Mr. Commissioner,  
22 section 17 of our code deals with clearing. The  
23 most visible impact of the pipeline will be the  
24 amount of land that is cleared for the various  
25 activities. As presented earlier, clearing of  
26 forest land within a discontinuous permafrost and  
27 continuous permafrost terrain must be held to a  
28 minimum because of the delicate thermal balance that  
29 occurs in these lands. Permafrost melt can  
30 occur even though the surface vegetation is  
left essentially intact because of the important role





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1 that trees play in dissipating incoming energy.

2 This can result in severe geothermal changes in  
3 permafrost terrain such as slumping, solifluction,  
4 ground subsidence.



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Clearing will

also cause the degradation of permafrost for many years, based upon studies in Alaska and the information presented by Dr. Ross McKay the first week of the hearings, and by others in the literature. Thus both strict control of clearing methods and ensuring that only the minimum area is cleared become essential in holding environmental impact to a reasonably low level. Due to slower growth rates of trees and tundra plants, recovery to natural conditions will take longer than in southern climates. Reduction of this potentially important impact can be accomplished by the adequate enforcement of the 26 regulations listed in the code, which are paraphrased briefly as follows:

1. 17.1 to 17.7 and 17.15 and 17.16 deal with clearing only the minimal area needed for a given activity by hand.
2. 17.8 to 17.14 deal with precautions to minimize surface disturbance of the moss and surface plant layer in relation to machine clearing. This clearly implies that many areas will be hand rather than machine cleared.
3. 17.20 to 17.24 deal with disposing of all slash carefully by either controlled burning or I wish to add as well that chipping is a viable alternative to burning in many places.
4. 17.25 to 17.26 relate to full cleanup after clearing operations and the re-vegetation of surface disturbed soils.



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WITNESS CRAIK: Mr. Commissioner,

Section 18 of our code deals with material borrowing and handling. Minimization of degradation resulting from material borrowing and handling can be accomplished by enforcement of several regulations.

1. Applying for permission to use any material from public lands.

2. Using existing material sites in preference to opening new ones.

3. Shaping material site boundaries to blend in with surrounding land patterns.

The following code items spell out our proposed regulations. If project personnel require materials from public lands, the applicant shall make application for procurement of such materials to the agency. Plans for mining, removal and transportation of materials shall be submitted to the agency. No material shall be removed by project personnel regardless of permits or approvals without prior approval. Wherever possible, the use of existing material sites shall be authorized in preference to new sites. Material sites shall be cleared in accordance with the clearing requirements of the code. Material site boundaries shall be shaped to blend in with surrounding natural land patterns, regardless of the layout of material sites primarily emphasis shall be placed on the prevention of soil erosion and damage to vegetation. Surface materials to be stripped or moved from material sites shall be





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1  
2 stockpiled to permit the re-use of such material in  
3 restoration activities. All surplus excavated materials  
4 which are in excess of that required to backfill around  
5 any structure, including the pipeline, shall be returned  
6 to the source of such material, or shall be disposed  
7 of in a manner and at a location approved by the  
8 agency.

9 WITNESS ADAM: Section 19 of  
10 our code deals with access. In the presentation of  
11 impacts, we showed that access roads, aircraft landing  
12 strips, and helicopter pads can cause damage to the  
13 environment. They can result in excessive terrain  
14 disturbance and destruction of vegetation. They can  
15 cause disturbance to wildlife, and they can pose  
16 problems for fish, and their habitats at river and  
17 stream crossings.

18 Minimization of degradation  
19 resulting from access roads, landing strips and helicopter  
20 pads can be accomplished by adequate enforcement of  
21 several regulations.

- 22 1. Designing roads, landing strips and helicopter  
23 pads to avoid terrain disturbance.  
24 2. Establishing design speeds on roads to avoid  
25 disturbance to wildlife.  
26 3. Designing roads to avoid interference with drainage  
27 patterns or stream flows.

28 The following code items spell  
29 our our proposed regulations. The applicant shall  
30 submit for approval by the agency detailed location and



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1  
2 layout plans for all proposed access roads, aircraft  
3 landing strips, and helicopter pads all in accordance  
4 with this code. The submission shall include detail  
5 with regard to widths of rights-of-way, sizes of  
6 landing strips, and helicopter pads. Type of con-  
7 struction, periods of use, maximum wheel loads anti-  
8 cipated, traffic loads anticipated, areas to be  
9 cleared, drainage systems, methods of removal and  
10 restoration of areas and any other detail the agency  
11 may require to assess the need for and proper operation  
12 of the road, landing strip, or helicopter pad.

13 Clearing for access roads,  
14 landing strips, and helicopter pads shall be carried  
15 out in accordance with clearing regulations in the code.  
16 Widths of rights-of-way for permanent roads shall be  
17 subject to the approval of territorial or federal  
18 authorities. Widths of rights-of-way for temporary  
19 roads shall be approved by the agency. Access roads  
20 shall be designed to avoid cuts in ice-rich terrain.  
21 The alignment of access roads shall avoid unstable  
22 slopes. The general and geometric design criteria  
23 shall be suitable for the class of road being construc-  
24 ted and for the design speed. Design speed shall be  
25 established to avoid disturbance of wildlife.

26 Design loads for roads and  
27 bridges shall equal or exceed design loads for exist-  
28 ing territorial and federal roads in the area. Design  
29 loads shall provide for the movement of heavy construc-  
30 tion equipment. Roads, landing strips and helicopter



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pads across ice-rich terrain shall be constructed on either granular fill embankments or on a combination of insulating materials and granular fill. The embankments shall be of sufficient thickness to avoid disturbance of the existing thermal regime. Embankments shall be placed to withstand actual loading.

Sections of alignment and design -- excuse me, selections of alignment and design of embankments shall consider but not be limited to the following: Topographical features, availability of embankment materials, terrain types -- that is the type of sub-grade, surface water runoff, thermal regimes in permafrost locations, erosion control, construction techniques, and local regulations.

Roadways shall be located to avoid interference with natural drainage patterns. Roads shall be designed to avoid induced and accelerated erosion. For roadway drainage, a minimum of two culverts shall be installed at each location. Culvert elevations shall be staggered. Measures shall be taken to prevent icings on roads. Maximum permissible grades of access roads in general shall be 12%. Maximum permissible grades of any access roads located on river banks shall be 5%.

Now I'd like to turn to Section 20 on winter road construction. Section 20 of our code deals with winter road construction. In our presentation of impacts, we showed how, if winter roads are not carefully constructed, and if the schedul-





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1  
2 ing of the winter construction period<sup>does</sup> not completely  
3 coincide with the available winter road season, serious  
4 terrain degradation can be anticipated.

5 This degradation can be elimin-  
6 ated by adequate enforcement of several regulations.

7 1. Establishing strict limitations of the type of  
8 equipment used in constructing winter roads

9 2. Removal of all equipment and material when  
10 abandoning winter roads.

11 3. Using only snow from pre-cleared rights-of-way.

12 4. Imposing strict controls on the locations and  
13 construction of ice bridges.

14 The following code items  
15 spell out our proposed regulations. The applicant  
16 shall submit for approval by the agency layouts of  
17 all proposed winter roads. The submission shall con-  
18 tain all detail with regards to width of trail, type  
19 of construction proposed, minimum snow and/or ice  
20 thicknesses, and densities; periods of construction,  
21 periods of use, maximum axle loads anticipated,  
22 number of vehicle passes, records of the normal  
23 freezeup and breakup dates for the area in which the  
24 roads are located, ice-rich locations including  
25 approaches, and weather data on the amounts of normal  
26 snowfall in the area and any other data the agency  
27 may require.

28 Clearing of winter roads  
29 shall be carried out in accordance with the clearing  
30 regulations of this code. Equipment to be used by



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1  
2 project personnel for winter clearing and for con-  
3 struction of snow roads shall be track type with a  
4 maximum gross weight of 25,000 pounds. Vehicles used  
5 shall not exert ground pressures in excess of eight  
6 pounds per square inch. Turning radii for such  
7 equipment shall be established so that existing  
8 vegetation shall not be damaged through equipment use.  
9 Equipment use shall be subject to the approval of the  
10 agency. The agency may require clearing operations  
11 for winter roads to be halted at any time, regardless  
12 of prior approvals.  
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1  
2 Winter road construction  
3 operations shall be subject to continuous inspection of  
4 the agency and the applicant shall afford the agency  
5 all the facilities it may require to carry out such  
6 inspection.

7 The applicant shall notify  
8 the agency a minimum of 48 hours prior to the commence-  
9 ment of any winter road construction operation.  
10 The agency may require project personnel to abandon  
11 any winter roads, or may restrict the use of such  
12 winter road to certain periods of the day. The  
13 agency shall give a minimum of 48 hours' notice to  
14 project personnel prior to ordering such abandonment  
15 or curtailment of use.

16 Project personnel shall re-  
17 move all material, plant and equipment from the work  
18 area prior to abandonment of the winter road. Should  
19 such removal be impossible, project personnel shall  
20 store such material, plant and equipment in a location  
21 approved by the agency. Such material, plant and  
22 equipment shall not be moved from such storage area  
23 without the prior approval of the agency.

24 Winter roads shall be con-  
25 structed and maintained utilizing snow from only  
26 pre-cleared rights-of-way. The procurement of snow  
27 from areas outside of pre-cleared rights-of-way shall  
28 be permitted only with the approval -- excuse me, the  
29 prior approval of the agency. Transport vehicles  
30 required for access to emergency snow sources outside





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pre-cleared rights-of-way shall not exert ground pressures in excess of four pounds per square inch. Maintenance procedures for winter roads shall be subject to the agency's approval. The applicant shall maintain complete records of the construction and operation of winter roads. Ice bridges shall be constructed only in locations approved by the agency. Ice bridges shall be located to minimize approach grades. River and stream banks shall not be cut without the prior approval of the agency.

Approaches to the ice bridges shall be constructed of compacted snow and ice and shall be of sufficient thickness to completely protect the stream or river banks including the vegetative cover on the banks. Ice bridges shall be constructed of compacted snow and ice, and shall incorporate no other material. The abandonment or destruction of ice bridges and approaches thereto shall be in accordance with procedures set out by the agency. Ice bridges shall be constructed so they will not detrimentally interfere with or impede winter flows in any river or stream.

Thank you.

WITNESS WILIMOVSKY: Mr. Commissioner, the conditions for protection of stream and river crossings are contained in Section 21 of the Board's "Towards an Environmental Code." The code requires that culverts and bridges be designed to accommodate a 50-year flood, code item 21.3.



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The code calls for stream and river crossings to be made in ways that prevent or minimize erosion. Code items 21.1, 2, 4, 6, 10, 12 and 15. The code calls for minimization of scour at stream crossings, item 21.7. The code requires adequate protective containment of undisturbed materials on stream banks until excavation of the bed is complete; such a containment is called a plug. Item 21.13.

The code prohibits operation of mobile ground equipment in water courses without approval. 21.14.

The code requires that burial of chilled pipeline not restrict or eliminate water flows or cause icings. Item 21. 8.

The code requires that overhead structures be used for crossing deep narrow streams with ice-rich banks. Item 21.9.

WITNESS ADAM: Drainage and erosion control is dealt with in Section 22 of our code. In our presentation of impacts, we showed how the intense cutting action of water may produce both increased sheet-wash and gullyng wherever drainage alterations are induced . Drainage alteration may also affect vegetation and wildlife habitat, and we showed how erosion processes can cause terrain degradation.

Minimization of impact due to drainage alteration and erosion can be accomplished by adequate enforcement of several regulations.

1. Incorporating draining and erosion control measures



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1  
2 into all design and construction activity.

3 2. Stockpiling and using surface material taken from  
4 the disturbed areas,

5 3. Avoiding unstable slopes and other unstable  
6 terrain types in locating the pipeline.

7 The following code items spell  
8 out our proposed regulations. The applicant shall  
9 incorporate drainage and erosion control measures into  
10 pipeline project design and construction activities  
11 to avoid alteration of the existing hydrological regime  
12 and to minimize erosion. Measures shall provide for  
13 the movement of surface and sub-surface water across  
14 pipeline project lands. Stable drainage courses for  
15 surface and sub-surface drainage shall be provided  
16 on the down-slope side of the pipeline along the  
17 pipeline right-of-way. All drainage and erosion  
18 control measures <sup>and</sup> techniques shall be shown and described  
19 on the applicant's drawings and specifications and shall  
20 be subject to the approval of the agency.

21 Drainage and erosion control  
22 measures shall be maintained by project personnel  
23 around temporary facilities during all phases of  
24 construction activities. The applicant shall ensure  
25 that all pipeline project construction and commission-  
26 ing activities are carried out so as to avoid or  
27 minimize disturbance to vegetation and natural drainage  
28 patterns. Design of the pipeline shall provide for  
29 the construction of control facilities that will avoid  
30 or minimize erosion. Erosion control facilities





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1  
2 will be constructed to avoid induced and accelerated  
3 erosion, and to lessen the possibility of the formation  
4 of new drainage channels resulting from pipeline project  
5 activities.

6 In permafrost areas, facilities  
7 shall be designed and activities conducted in such a  
8 way as to avoid or minimize disturbance to the thermal  
9 regime of the ground. Surface material shall be taken  
10 from disturbed areas -- excuse me, surface materials  
11 taken from disturbed areas shall be stockpiled and  
12 utilized during restoration operations. Stabilization  
13 procedures and practices shall be determined according  
14 to the requirements of each specific location and shall  
15 include but not be limited to re-vegetation, seeding  
16 and planting, diversion structures, impervious plugs  
17 in ditch, stable backfill in ice-rich areas, and  
18 granular protection.

19 Where degradation of ice-  
20 rich permafrost soils may occur, special attention  
21 may be given to maintaining the thermal regime of  
22 the soils and to the drainage of water so that it will  
23 not pond in these areas. Special design measures  
24 and precautions shall be taken to ensure that water  
25 drains freely across the chilled pipeline within  
26 channels constructed for such purposes. In locating  
27 the pipeline unstable slopes and areas subject to mud  
28 flows, land slides, mud slides, avalanches, rockfalls,  
29 and other types of movement shall be avoided.

30 Where marginally stable slopes



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cannot be avoided, special design measures and precautions shall be taken to prevent failure. To prevent erosion, rip-rap shall be placed on the banks and bottoms of all rivers, streams, and flood plains crossings as required. Rip-rap shall be of such a size as to remain in place at peak river and stream velocities. Banks of rivers and streams shall not be cut down.

Spilling basins shall be provided, where necessary, to prevent outfall erosion. Surveillance particularly in areas where the chilled pipeline is constructed in ice-rich permafrost areas shall be maintained during construction of the pipeline.

Thank you.

WITNESS CRAIK: Mr. Commissioner, Section 23 of our code deals with sanitation and waste disposal, and states:

"All wastes generated in pre-construction, construction and commissioning activities shall be disposed of or removed in a manner approved by the agency, which also complies with existing federal and territorial regulations.

All domestic solid wastes generated in camp operations shall be collected on a daily basis, or more often, as required, and stored in designated and approved storage areas.

All trash and rubbish shall



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1  
2 be either baled for storage or placed in  
3 storage compounds which shall be designed to  
4 prevent such trash and rubbish from being  
5 carried by wind.

6 Storage areas for  
7 wastes other than areas for storage of waste  
8 in sealed containers shall be located a mini-  
9 mum of 150 feet from any kitchen or living  
10 quarters, unless such storage is within  
11 incinerators.

12 All waste storage shall be  
13 fenced enclosed areas so as to prevent access  
14 by unauthorized personnel. Fences shall be of  
15 a type proven effective against bears, foxes,  
16 wolves, wolverines, and similar species of  
17 wildlife which may be attracted to such areas.

18 The preferred method of  
19 waste disposal for all flammable wastes shall  
20 be by incineration. The applicant may submit  
21 plans for sanitary land fill methods of  
22 disposal for those wastes which, when buried  
23 in land fill sites, will not adversely affect  
24 the quality of ground water in the long term."  
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1 And the agency may approve sanitary land fill  
2 operations and project personnel shall comply  
3 with all qualifications, conditions and stipulations  
4 attached.

5 Incinerators shall be  
6 used with maximum caution to prevent forest  
7 and tundra fires. After incineration material not  
8 consumed shall be removed and disposed of in an  
9 approved manner. Incinerators shall be used in  
10 and operated in a manner to avoid air pollution and  
11 ice fog. Facilities and devices which cannot  
12 be prevented from producing ice fog shall be located  
13 so as not to interfere with wildlife.

14 Domestic wastes such  
15 as animal and vegetable matter generated by  
16 restaurants, cafeterias, hotels and hospitals and  
17 commissaries may be garburated and discharged to  
18 sanitary sewage collector systems.

19 All metallic, non-flammable  
20 wastes, such as oil drums, metal scrap, discarded  
21 equipment, concrete and discarded buildings shall  
22 be stockpiled in enclosed storage areas, shall be  
23 removed from pipeline project lands unless disposal  
24 of these wastes in landfill sites is approved.

25 Toxic or potentially  
26 toxic material shall not be  
27 disposed of in landfill sites. All sanitary sewage  
28 generated during the construction and commissioning  
29 activities shall be treated so as to render such  
30 sewage completely harmless to the environment.



Untreated sanitary

sewage shall not be discharged into rivers, streams, lakes or muskeg areas. All sewage treatment and collector systems shall be constructed so as to prevent seepage or leakage which may contaminate ground water.

WITNESS WILIMOVSKY:

A Mr. Commissioner, terms and conditions covering explosives are contained in section 24 of the Board's "Towards an Environmental Code." The first two sections of the code are involved with safety and control. The third section suggests the development of techniques to minimize explosive scatter expected as a consequence of blasting in frozen or structurally non-plastic materials. Our concern involves the typical range of explosives used in construction. We believe , through the employment of shaped and related charges the difficulties of this concern could be avoided. I would emphasize the title of the Board's volume II is "Towards an Environmental Code." This section on explosives is a first attempt at providing environmental guidelines for a project where few existing standards are applicable. It is purposely conservative and I emphasize the word "conservative." Consequently it is expected that differences of opinion might occur regarding specific provisions.

I concur with section 24.4, but believe that section 24.5 is stringent for practical



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1 or universal application.

2 As indicated in my  
3 testimony on the aquatic environment, the proper  
4 use of explosives in an aquatic medium in summer should  
5 present no environmental hazard. Most of the provisions  
6 of 24.5 pertain to terrestrial organisms. It would  
7 appear that one must carefully distinguish between  
8 underground or underwater blasting activities which  
9 can largely be contained to small disturbance areas and  
10 quarrying operations and those whose purpose is  
11 to dislodge significant masses of earth.

12 Dr. Cowan concurs with this opinion. As we gather  
13 more data, the Board hopes to refine the provisions  
14 and definitions of section 24.5 as well as to  
15 add a section on under ice blasting.

16 THE COMMISSIONER: Excuse  
17 me, Dr. Wilimovsky, isn't the experience of the  
18 seismic exploration applicable at all to the kind  
19 of blasting you might expect on a pipeline right-of-  
20 way? They carry out blasting underground and I  
21 have seen it. I think that they carry out blasting  
22 under water as well -- I am not -- I did -- It didn't  
23 appear to me from what you said that whether you had  
24 taken that into account whatever their experience  
25 has been, maybe it isn't applicable.

26 A Yes, sir, the thrust  
27 of this section 24 on explosives is for the protection  
28 of the environment, animals and plants and so forth.  
29 The explosives used and the experiments done vis a  
30 vis explosives used in seismic work use various kinds





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1 of powders with pulses such as to create a signature  
2 underground. Very few data are available from  
3 seismic operations on the effect on animals. The  
4 applicant's work and some other work of the  
5 government is the only material of recent vintage in  
6 this general area, it is a contribution. The  
7 thrust, as I state, concerns the distances that  
8 these types of explosions should be held to from  
9 existing populations of animals and it is in that  
10 regard that I submitted my statement.

11 THE COMMISSIONER: Yes, I  
12 understand that. Could I just add one thing. No  
13 doubt betraying my ignorance, but when they use --  
14 when they let off explosives under water, the  
15 shock wave is transmitted by the water to the earth  
16 beneath the stream or the lake, so in certain types  
17 of country they don't even have to drill to set  
18 off their explosives. Is there any experience to  
19 show the impact or the effect of that kind of  
20 blasting or use of explosives, whatever you call it  
21 on fish in streams and lakes?

22 A yes, sir, there is an  
23 extensive literature and experimental work done on that.  
24 When the oil companies first began extensive seismic  
25 work in the marine environment they were required by various  
26 conservation organizations to document the "kill range",  
27 so to speak. It is these basic research areas that  
28 provide a basis for our interpretation. As a  
29 matter of fact, the kind of point charge used in  
30 seismic work is completely different from that used



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1 in construction and it is now a matter of practice in  
2 many seismic operations in the sea not to use  
3 explosives at all, but an eletrostatic pinger.  
4 The nature of this pulse is such that you don't  
5 kill anything. By firing small charges -- if one  
6 must use explosives -- by firing small charges such  
7 as dynamite caps in the air -- just prior to the  
8 main charge, you can disperse large -- the majority  
9 of fish from an area. A vast amount of data  
10 from California, Alaska and Australia indicates that  
11 kills in both the marine environment and the  
12 fresh water environment for seismic purposes can be  
13 held to almost minimum.

14 Thankyou.

15 WITNESS BLISS:

16 A Mr. Commissioner,  
17 we have only three sections to go and we will be  
18 through. The next one, section 25 of the code  
19 deals with fire contingency plans.

20 In our presentation of  
21 impacts, we showed how fires in permafrost regions lead  
22 to deeper thaw, increases in number of slumps on ice  
23 rich slopes and results in changes to animal habitat.  
24 Fires also threaten the safety of the pipeline as  
25 well as cause at least temporary aesthetic losses  
26 and the potentiality of loss of communities.

27 As we have seen earlier, fires  
28 are a normal part of the normal forest environment.  
29 Fires also extend out into the forest tundra  
30 and trundra. With a project of this magnitude and



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1 diversity it would be unrealistic to assume that  
2 fire frequency would not increase as a result of  
3 the project. However, potential impact will be  
4 less if fire control plans are devised and enforced in  
5 the vicinity of the line.

6 Such a plan can be effective  
7 with adequate enforcement of several regulations in  
8 Section 25 of the code which again can be  
9 paraphrased to say. 25.1 and 25.2 deal with  
10 developing a contingency plan which will be well  
11 before any activity starts on projected lands,  
12 and Secondly, 25.3 which relates to educating all  
13 personnel concerning prevention of fires, maintaining  
14 all equipment to maintain fire hazards, developing  
15 observation and detection systems and integrating them  
16 with present systems, the inclusion of  
17 core firefighting crews in every construction crew and  
18 ensuring that all surveillance flights along the pipeline  
19 right-of-way look for possible fires in the vicinity of  
20 the pipeline.

21 WITNESS MCTAGGART-COWAN:

22 A Mr. Commissioner, the  
23 conditions which we propose concerning fuel storage and  
24 handling are contained in our document, " Towards an  
25 Environmental Code " under item number 26.  
26 In our presentation of impact we stated our opinion  
27 that fuel spills into the Mackenzie River, the Mackenzie  
28 Delta or the edge of the Beaufort Sea have potential  
29 for wide-spread and large scale destruction of  
30 water birds in their habitat. We stated also that





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1 marine population -- marine mammal populations in  
2 Kugmallit Bay and along the Arctic  
3 coast may be damaged by oil spills, but details  
4 at this time are uncertain.  
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As

well, muskrat and beaver in fresh water regions are vulnerable to oil spills. We stated also that accidental spills of oil and some other chemicals used in this project could be very damaging to bird populations, water bird populations, especially if these occurred toward the head of the Mackenzie Delta.

It is the intent of this code that there should be no discharge of petroleum products or other pollutants into or upon any lands or waters during the pre-construction, construction and commissioning period. Minimization of the potential and thus of the impacts resulting from fuel spills can be accomplished by adequate enforcement of several regulations.

The first of these are a series of regulations concerning the locating of fuel, lubricant, and petro-chemical depots at adequate distances from lakes, streams, or rivers. These are specified in our code under item No. 26.2 and 26.8.

Second, regulations providing for oil spill containment dikes for all storage and pump facilities. Details of our suggestion are given in code item 26.3, 26.4, 26.5 and 26.7.

Third, preventing any discharge of petroleum products upon any lands or waters. The control items in our code are 26.6, 26.8, and 26.10.



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1  
2  
3 Finally, we provide in our  
4 code for the development of contingency plans for the  
5 prevention and control of accidental spills. The  
6 details are specified in items No. 26.10, 26.11, and  
7 26.12.

8 We aver that the applicant  
9 must recognize its prime responsibility for the  
10 protection of the public and the environment from the  
11 effects of all such spillage. This item and the details  
12 which we propose to have included in contingency  
13 plans are specified in items 26.10.

14 WITNESS BLISS: Mr. Commis-  
15 sioner, the final section of our code, Section 27,  
16 deals with the termination of use of temporary  
17 facilities and restoration. An important part of  
18 any project is the restoration of all disturbed lands  
19 and the cleanup of all temporary facilities such as  
20 work camps, stockpile sites, access roads, equipment  
21 and materials. Failure to do this results in severe  
22 aesthetic losses. It can also cause serious terrain  
23 degradation where restoration has been inadequate.

24 This can be avoided by  
25 adequate enforcement of several regulations. These  
26 are included and can be summarized then from Section  
27 27, 27.1 deals with removal of all temporary structures  
28 or facilities and surplus equipment at the end of the  
29 project. 27.2, with putting to bed all temporary  
30 access roads at the termination of their use.

27.3 to 27.12, instituting adequate





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1  
2 restoration procedures on all disturbed lands, including  
3 ground stabilization practices, where necessary. The  
4 restoration practices must include the replacement  
5 of materials removed during clearing operations, and  
6 the establishment of vegetation on those exposed  
7 surfaces.

8 27.13 and 27.14 deal with restoration methods  
9 that shall not result in the creation of new lakes,  
10 the drainage of existing lakes, or unnecessary diver-  
11 sion or disturbance of natural drainages, and consider  
12 erosion control procedures which will be necessary  
13 to accommodate maximum runoff.

14 We specifically, sir, have  
15 not dealt with the end of the operation of this  
16 proposed pipeline, i.e. the final abandonment. You  
17 should be aware of the fact that we have not treated  
18 this specifically in the code but we feel that this  
19 might also be looked at. This, sir, concludes our  
20 summary of the code.

21 THE COMMISSIONER: Thank you.

22 WITNESS TEMPLETON: Mr.

23 Commissioner, we have about perhaps an hour to conclude  
24 our submission, and wonder if we could break here and  
25 come back this afternoon?

26 THE COMMISSIONER: All right.

27 Miss Hutchinson, the environmental guidelines for  
28 gas pipeline development, first draft, December, 1974,  
29 from the Ecological Protection Branch, will be marked  
30 as an exhibit. I have a copy here, and I take it



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1  
2 that the environmental code was earlier marked,  
3 wasn't it?

4 (ENVIRONMENTAL GUIDELINES FOR GAS PIPELINE  
5 DEVELOPMENT, DECEMBER 1974, MARKED EXHIBIT 142)

6 THE COMMISSIONER: Well,  
7 we'll adjourn till two o'clock then.

8 (PROCEEDINGS ADJOURNED TO 2 P.M.)  
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(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. GOUDGE: Mr. Commissioner,  
if we could start this afternoon, I think Mr. Temple-  
ton is about to conclude his presentation.

THE COMMISSIONER: Fine.

WITNESS TEMPLETON: I would  
like to, Mr. Commissioner, discuss the timing effort  
and urgency of establishing a regulatory agency.

Our studies of this pipeline  
proposal point out the need for specific, well thought  
out and well understood controls applied at the right  
time. They also make it clear that the preparation  
and timing of the government effort is all-important.

Any operation where thousands  
of men along with their support equipment must be  
moved into position obviously takes considerable  
organization and planning. Let us compare the  
logistics of building a pipeline in the north in  
wintertime with the logistics of landing the allied  
forces in the beaches of Normandy.

The Normandy landing was  
planned not only from the viewpoint of the air, ground,  
and sea forces that would actually perform the opera-  
tion, but also from the viewpoint of the general  
staff appointed by the countries mounting the effort.  
Preparations back in the home countries, decisions to  
be made as the landing progressed, how far to go  
before consolidation of the positions, and political  
and national issues all had to be anticipated and the





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alternatives formulated long before the operation proceeded.

No one would have expected the general staff to wait until the landing took place to become prepared. Yet some seem to think that the government forces in control of this project should be set in motion only when the project is approved.

The government forces are an integral part of the pipeline construction and operation, as were the general staff in the landing at Normandy. A well-trained, disciplined organization is as necessary for the government regulatory forces for this project as it was for the general staff of the allied forces. Each country had its own hopes, aspirations, and staff. Similarly, in this case, each of at least three government departments has its own hopes, aspirations and staff. Each probably would like to appoint the supreme commander. Certainly one is needed, just as planning is needed. A trained, disciplined force is needed to control this land in the north. But it does not simply occur overnight.

In addition to the Territorial Governments, three departments have jurisdiction over this project -- the Department of Indian & Northern Affairs, the Department of the Environment, and the Department of Energy, Mines & Resources in the National Energy Board. Each has partial jurisdiction and responsibility, and each has staff and expertise that is unique and needed to control the project.



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1  
2 We have concluded that a  
3 single agency to control the project by the Federal  
4 and Territorial Governments is needed.

5 No matter who I talked to in  
6 government, they agreed that a single agency was  
7 needed. But each person, I felt, assumed that his  
8 department would supply the agency. It would be  
9 unfortunate if this decision resulted from bureaucratic  
10 manoeuvring rather than a well thought out plan. The  
11 government needs to make a political decision now,  
12 that if a pipeline is approved a single agency is  
13 required. A decision is also needed as to whom the  
14 agency will report, and what role the departments will  
15 be required to play in supporting it. I think these  
16 decisions could well take from six months to a year.

17 Now I would like to discuss  
18 the next stage of setting up the agency, the process  
19 of securing senior management people who will direct  
20 the agency. Obviously these people are fully employed  
21 elsewhere so that there could be a time lag of from  
22 two to six months in getting them even seconded to the  
23 agency. Then would follow a period of securing  
24 senior technical people in a variety of disciplines.  
25 These people, too, will have full-time jobs elsewhere  
26 and to get them seconded will take another two to six  
27 months.

28 Then both groups would need  
29 time to become familiar with the mountains of paper  
30 work that have been generated for these hearings, to



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1  
2 say nothing of technical reference materials that will  
3 be required.

4 After this break-in period,  
5 the agency people would need time to undertake the  
6 necessary inter-disciplinary work on the problem of  
7 control -- how performance was to be measured, and what  
8 was acceptable and what was not acceptable. In this  
9 connection we submitted our Volume 2,

10 "Towards an Environmental Code."

11 In the introduction we said:

12 "The code is not yet in its final form. It  
13 needs to be reviewed and revised by people  
14 with skills and experience not available  
15 to its authors. It was prepared by the authors  
16 in consultation with 13 engineers and ecologists  
17 and now it should be reviewed and amended by a  
18 broader-based group which would include, among  
19 others, pipeline experts and authorities on  
20 northern regulations."

21 To update the code on a  
22 broader base, we estimate a minimum time for doing  
23 this of six months. But an adequate code or regulation  
24 regardless of what it is called, will be needed very  
25 early in the project, before the applicant makes its  
26 initial basic decisions that will govern future  
27 operations and procedures. Just to show you how long  
28 these things can take, the first meeting of the  
29 Canadian Standards Association Committee on Gas Pipe-  
30 line code, Z-184, in Canada started in 1963 and it





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McTaggart-Cowan  
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1  
2 was not until 1972 that I felt the code that we had  
3 prepared and I worked on was in good enough shape that  
4 we could recommend to the Province of Manitoba that  
5 it be adopted there.  
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McTaggart-Cowan, Gourdeau  
In Chief

1  
2 Because of these projected  
3 delays I suggest that there is some urgency in  
4 starting to revise the code. In particular the  
5 first sections regarding the operation of the  
6 agency. Perhaps a code committee might even consider  
7 adding a social section to the code to control activities  
8 affecting communities and the northern peoples.

9 I am not proposing that the  
10 organization of a committee to work on an in environ-  
11 mental code or start a social code would in any  
12 way obviate the work of this Commission. My intent  
13 is to get this important committee organized and  
14 working so that by the time your ruling,  
15 Mr. Commissioner, is given, it will understand  
16 the issues, the authorities and be able to operate  
17 them effectively.

18 Undoubtedly there are  
19 those who will argue that the government already  
20 has land use regulations and land use inspectors.  
21 We agree. But would like to point out that the  
22 land use regulations were drafted basically to control  
23 seismic crew operations which run into few of the  
24 environmental problems associated with a major  
25 effort such as this pipeline. I am referring to  
26 the problems such as summer operations which include  
27 apart from the pipeline itself, construction and  
28 operation of wharves, stockpile areas, access roads,  
29 quarries, compressor stations, to mention only a  
30 few.

One must also remember



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1 that it took two years to draft the land use regulations  
2 and put them into effect. The reason I stress the  
3 urgency of setting up the agency is that it must  
4 be able to respond almost immediately when a  
5 permit is granted to some very basic and fundamental  
6 decisions.

7 As in any large project  
8 the basic logic that goes into the critical path  
9 chart which plots the time needed for each activity  
10 including decision making, must be made at the  
11 outset. In planning any construction operation,  
12 the senior management always know that they must  
13 be ready to make the most basic of decisions in the  
14 first few months of the project. After these first  
15 are made, the most critical construction operations  
16 as to the time available to perform the operation  
17 show up and the decisions are reviewed to see if  
18 alternate methods or equipment can ease the time  
19 required for the critical activities.

20 Today there are shortages  
21 of material and manufactured equipment. Delivery  
22 dates of two years from date of ordering from  
23 even small orders are common, and of course this is  
24 not a small project. Thus, in the first few months  
25 following approval, we can expect the applicant will  
26 be making numerous major decisions which could have  
27 substantial implications for the environmental impact  
28 of the project. We will have to make a decision --  
29 They will have to make a decision when the start up  
30 date for each spread will be, and also the close down





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1 dates. With 8000 men in the field, the applicant  
2 cannot turn the operation on or off with changes  
3 of weather. Construction activities are so large and  
4 so concentrated that they can be compared to the  
5 Lion's Gate Bridge in Vancouver in the evening rush  
6 hour. All roads from the west end converge into  
7 two lanes on the bridge, and when an accident puts  
8 a stopper on that funnel, the physical, social and  
9 business reverberations do not settle down for  
10 many hours.

11  
12 So it will be with the  
13 winter construction activities. If something  
14 stops at the head end, the reverberations will be  
15 felt all over Canada and people and materials will  
16 be stockpiled all over the place.

17 I have dwelt at length on this  
18 one example, but I really wanted to emphasize two points  
19 having to do with control of the project. The first  
20 has to do with the timing of the basic decisions  
21 on the critical path chart. -- The type of equipment,  
22 the type of tractor treads, the type of fuel, the  
23 location of airports, fuel caches, wharves, the number  
24 of men, pieces of equipment needed for each spread  
25 to perform the allocated work in a specific number of  
26 days.

27 All of these decisions will  
28 have to be made at the earliest possible date by the  
29 pipeline company so that the equipment can be ordered.  
30 All of these decisions have environmental implications,



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1 and if the government agency wants to approve, veto  
2 or alter these decisions, it should be ready and  
3 trained by the time the approval of the pipeline  
4 is given.

5 The second point about  
6 the Lion's Gate Bridge funnel example is the problem  
7 of shutting a job down by an agency inspector if  
8 the pipeline company does not do things properly.  
9 The right to shut a job down as a means of enforcing  
10 a decision by an inspector is a usual method of  
11 enforcement, but the problems of doing so at the  
12 job end of this funnel will cause more environmental  
13 damage than perhaps he was trying to prevent.

14 My experience shows that  
15 if the do's and the don't's of a construction job  
16 are clearly written and understood by both the inspectors  
17 and the contractors, and the inspection staff are  
18 well-trained and authoritative, and able to apply  
19 financial penalties if necessary, the need to shut  
20 a job down becomes rare.

21 However, to reach this  
22 state of control requires detailed specifications to  
23 be administered by a trained staff. This takes time  
24 and brings me back to my conclusion earlier that there  
25 is some urgency in getting on with the job of setting  
26 up the agency, allocating people and getting familiar  
27 with decisions that will be required if the project is  
28 approved.

29 I am not worried about this  
30 agency taking over the duties of this Commission.



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In Chief

1 I am worried that the agency will not be functional  
2 in time to put into effect the terms and conditions  
3 that you recommend, sir.

4 I recognize -- or I realize  
5 that all this sounds as if we have accepted the  
6 premise that the pipeline will be built and that it  
7 will start as soon as this Commission is finished.  
8 I do not mean that you , Mr. Commissioner, do not  
9 have the option of saying that you do not recommend  
10 that a pipeline be built. I think you do have  
11 that option. I think you can also recommend as we  
12 did that the pipeline not be built until the land  
13 claims are settled, but just as we say to the  
14 applicant, "You should be prepared, you should  
15 have contingency plans for forest fires, line breaks  
16 and oil spills", we say to the Government, "You should  
17 be prepared to administer the governmental functions  
18 of this project as early as November the 1st, 1976",  
19 which date might be the approval date of the Government  
20 of Canada.





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1  
2 Of course I am guessing but these are things that you'd  
3 have to guess at to put it into perspective. In  
4 arriving at that date, I assume that the Federal  
5 Cabinet has already studied the matter and is ready  
6 to make a decision as soon as the terms and conditions  
7 are spelled out. A number of Cabinet Ministers have  
8 spoken out on the matter, and this has been reported  
9 in the press. Mr. Chretien, as Minister of Indian &  
10 Northern Affairs, in the opening of the Council of  
11 the Northwest Territories in Yellowknife in 1974, said;

12 "This government, after weighing all factors  
13 involved very carefully, has come to the conclu-  
14 sion that a gas pipeline down the Mackenzie  
15 Valley is in the national interest. In reaching  
16 this conclusion, the government has been in-  
17 fluenced by the possibility that a failure to  
18 act in a positive manner towards this project  
19 could lead to the acceptance by the U.S. Govern-  
20 ment of the El Paso alternative for Prudhoe  
21 Bay gas, that of its liquefaction and transport  
22 by tanker from Valdez. This in turn could  
23 mean that Canadians would not have access to  
24 Mackenzie Delta gas when they need it. The  
25 key to meeting Canada's gas needs in the  
26 next decade involves a joint gas pipeline  
27 along the Mackenzie Valley."

28 I think it is not unreasonable,  
29 therefore, to ask that the administrative forces of  
30 the government be ready to perform its function in



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McTaggart-Cowan  
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1  
2 the control of the project by November, 1976.

3 Mr. Commissioner, I come back  
4 to the concern that some may have, that if the  
5 government provides information to these hearings that  
6 they are interfering in your job. I do not see that  
7 as a serious threat. You have demonstrated an independ-  
8 ence of mind in several instances that indicate that  
9 you can withstand any brain-washing attempts by a  
10 few bureaucrats. Interference from elected representa-  
11 tives of Parliament would, in my opinion, be a different  
12 category and would be improper. I would, however, like  
13 to see the government administration demonstrate its  
14 intention at the hearings in the same way that the  
15 applicant has demonstrated his intentions. When this  
16 was done, you would have a much better confidence in  
17 the impact predictions and could spell out more  
18 clearly the terms and conditions as are appropriate,  
19 having regard to the social, environmental and  
20 economic impact of the construction, operation, and  
21 abandonment of the proposed pipeline.

22 Which brings me around to the  
23 subject of how does one find out what the bureaucracy  
24 is planning to do? I think since we are talking about  
25 environmental impacts, and terms and conditions that  
26 will limit these impacts, it is just as important to  
27 know what the government will do as what the applicant  
28 will do to establish and enforce environmental  
29 controls. We hold this view very strongly because we  
30 see the actions of both the government and the applicant



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1  
2 at this time as variables. As in scientific studies,  
3 one must try to eliminate as many variables as possible  
4 so that the remaining variables are more easily deter-  
5 mined. What we are saying to you, Mr. Commissioner,  
6 is that there is no need for the actions of government  
7 to be a variable when you set your terms and conditions.  
8 In order to make our impact predictions, we set terms  
9 and conditions for government which are merely assump-  
10 tions on our part. Some assumptions have led to  
11 recommendations. But you need not make assumptions. We  
12 believe that the bureaucracy should present itself  
13 before this Inquiry and detail their intentions just  
14 as the applicant is doing.

15 Since there is no other forum  
16 where we might question government, we would like to  
17 end our discussions of the timing and urgency of govern-  
18 ment action by posing a series of questions which we  
19 would like to see answered by government at this Inquiry.

20 1. What authority do the various departments of  
21 government now have to control this project in the  
22 Yukon and Northwest Territories?

23 2. Will a single agency of government be set up to  
24 control this project, and if so, how long will it take  
25 to establish this agency?

26 3. Has a specific role been defined for the various  
27 departments regarding the inspection and control of this  
28 project in order to limit environmental damage? And  
29 what are these roles?

30 4. What staffing and organizational mechanism is planned?





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1  
2 5. Can the Cabinet transfer authority under a number  
3 of Acts from various departments to a different  
4 department or agency on a one-project basis?

5 6. Would legislation be necessary to establish a  
6 new agency with authority to formulate regulations as  
7 a performance code?

8 7. Would the agency or department have sufficient  
9 power to prosecute individual infractions and if  
10 necessary, order a cessation of offending operations?

11 8. How long would it take the Federal Government to  
12 set up a single agency to control this project by  
13 establishing a new authority?

14 9. Will an environmental code be established for this  
15 project, and will it be enforced by trained personnel?

16 10. How long will it take to draft, review, and  
17 finally approve an environmental code covering such  
18 new matters?

19 11. Is long-range land use planning in the Territories  
20 the responsibility of the Department of Indian &  
21 Northern Affairs & Development?

22 12. What progress has been made with this in the  
23 past two years, and what effort is currently being  
24 expended in this regard?

25 In summation of our presenta-  
26 tion, Mr. Commissioner, I won't go through it in very  
27 much detail, but perhaps just point out a few points.

28 In 1970 we set ourselves the  
29 task of assisting in achieving environment protection  
30 on this project. We were not entirely sure how to



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1  
2 reach that objective. AT first we thought that if we  
3 collected enough environmental base-line data, and  
4 presented an environmental impact assessment, we would  
5 achieve our goal, provided we could perform some  
6 monitoring during construction.

7                   However, when we started to  
8 write our report we found that the detailing, the  
9 methods of controlling the operations that would  
10 change the environment, had to be included. This  
11 led to the need to detail the controls by the  
12 pipeline company, the government, and the public. We  
13 now see that the need for detailed plans and specifica-  
14 tions for all aspects of the project to control environ-  
15 mental change, but since these cannot be produced now,  
16 there needs to be a government mechanism that can  
17 approve plans as they are produced, and an inspection  
18 force to see that the plans are followed or modified.

19                   We also see the need for  
20 a public monitoring group who do not have a line  
21 function, to periodically advise the public as to the  
22 successes and failures in environmental matters.

23                   Mr. Commissioner, since your  
24 ruling on May 23rd that each participant should write  
25 out the terms and conditions that should be applied  
26 if the application is approved, I would like to submit  
27 parts of Exhibit 135 as follows:

28                   The Recommendations Section of  
29 our Volume 1, "The Boards of Opinion"; our Volume 2  
30 in its entirety, "Towards an Environmental Code" ;



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McTaggart-Cowan  
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1  
2 and the recommendations accompanying the maps in  
3 Volume 3, "An Environmental Atlas"; perhaps I could  
4 summarize all these.  
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There are three levels

At the policy level we re-

At the general project

Lastly, at the general level



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In Chief

1 we recommend that the pipeline be operated at above  
2 freezing temperatures south of the Willowlake  
3 River.

4 At the site specific level we  
5 urge that the many recommendations presented in  
6 Volume III, "Environmental Atlas" be incorporated  
7 in the control mechanism.

8 Without innumrating them  
9 we wish to have the site specific and area recommendations  
10 contained in each map sheet of the atlas regarded as  
11 terms and conditions of any permit which may eventually  
12 be granted.

13 Only when the terms and  
14 conditions are set out at each level will environment  
15 protection be possible and only when these things  
16 are accomplished will the project be acceptable in  
17 our eyes. I would like to read the three paragraphs  
18 that I read near the first of our presentation in answer  
19 to the question, "From an environmental point of  
20 view is the project acceptable to the Board?"  
21 The Board's unaimous conclusion is that the applicant's  
22 proposed project is only conditionally acceptable from  
23 an environmental point of view. The Board has  
24 found that if reasonable precautions are taken and  
25 certain activities restricted to specific times of  
26 the year in locations as indicated by our atlas and  
27 suggested environmental code, then environmental  
28 damage could be held to what in our opinion is an  
29 acceptable level.

30 This does not infer, however,



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In Chief

1 that damage will be held to what in our opinion is  
2 an acceptable level. Though much work has been  
3 done there are still inadequacies in the detail of  
4 the applicant's exhibits and its commitments to  
5 environment protection. There are also inadequacies  
6 in governmental mechanisms in particular those  
7 pertaining to enforcement available to control the  
8 project. These <sup>in</sup>adequacies should be resolved before  
9 the applicant is given a permit.

10 Mr. Commissioner, that  
11 concludes our presentation on our report, but on  
12 Monday, you invited us to comment on looping of  
13 the gas pipeline, including additional compressor  
14 stations and on an oil line. We said at the  
15 start of our presentation on impacts of the  
16 proposed gas line that we would not address route  
17 revisions across the Mackenzie Delta and east of  
18 Fort Simpson without first having adequate information  
19 on the project. -- And adequate information on the  
20 environment in time for a thorough evaluation of  
21 impact. This would certainly apply to your invitation  
22 on Monday. Therefore, we will not try to make any  
23 assessment of impact of either looping or an oil  
24 pipeline now.

25 However, we will try  
26 to discuss some of the perhaps overriding issues in  
27 this regard. In 1970 the government presented  
28 a Mackenzie Valley Region gas and oil pipeline  
29 corridor concept. This was expanded in 1972 --  
30 in the 1972 guidelines to a highway and a multi-facility





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McTaggart-Cowan, Gourdeau  
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1 transportation corridor. We were concerned at that  
2 time that the Government planning had reached such  
3 a stage without any concrete evidence that we could  
4 see that studies had been conducted to justify  
5 the corridor concept. We wrote about this in a  
6 16 page letter to the Director, Environment,  
7 Social Program, Northern Pipelines, in December 1972,  
8 and I would like to enter this in the record.

9 THE COMMISSIONER: Thank  
10 you.

11  
12 ( LETTER FROM ENVIRONMENT PROTECTION BOARD TO  
13 DIRECTOR, ENVIRONMENT, SOCIAL PROGRAM,  
14 NORTHERN PIPELINES, DATED DECEMBER 22, 1972 MARKED  
15 AS EXHIBIT NO. 143)

16 A It was reported in  
17 that letter that some members of the Board as indi-  
18 viduals, rather than Board members had written to  
19 the Prime Minister of Canada in June 1972 when it  
20 became know that the Mackenzie Highway would be  
21 extended from Fort Simpson to Inuvik. In our letter to  
22 the Prime Minister we recommended, and I quote,  
23 "That an impact statement on the effect of constructing  
24 the recently announced Fort Simpson, Inuvik Highway,  
25 be prepared, published and submitted to an authority  
26 competent to judge the engineering feasibility,  
27 economic necessity, environmental implications and the  
28 techniques and constraints most likely to keep the  
29 unfortunate and social and ecological impacts to a  
30 minimum during the contruction and operation of



1 this new facility. Only then can the long  
2 term benefits and costs be properly weighed and  
3 seen to be properly weighed." End of  
4 quotation.

5 The Government's reply  
6 in August 1972 stated in part: "In summary,  
7 therefore, while the government will not be required  
8 to publish an impact statement as such, I think  
9 you will agree that we are taking all  
10 necessary steps to ensure that the environmental  
11 considerations are taken into account."

12 I would like to enter  
13 both of these letters in the record with your  
14 permission.

15 (LETTER FROM ENVIRONMENT PROTECTION BOARD TO PRIME  
16 MINISTER, JUNE 6, 1972, MARKED AS EXHIBIT 144)

17 (LETTER OF REPLY FROM PRIME MINISTER TO  
18 DR. MCTAGGART-COWAN, DATED AUGUST 28, 1972 MARKED AS  
19 EXHIBIT 145)

20 A In our letter to the  
21 director of the environment-social program we  
22 requested the government to reconsider that decision.  
23 We pointed out that, and I quote: "If the highways  
24 are planned and built first, they will effectively  
25 set the location of the corridor. This in turn  
26 will make it very difficult to plan the gas and  
27 oil pipelines since the route will have been established  
28 without a prior assessment of public convenience and  
29 necessity, sociological and economic considerations,  
30



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1 location with respect to towns, availability of  
2 construction materials, including gravel deposits,  
3 possible alterations to drainage patterns, the  
4 need for containment basins for oil line  
5 contingency plans and avoidance of power transmission  
6 line interference."  
7

8 And continuing that  
9 quotation: "The Board has therefore come to the  
10 conclusion that it would be in the interests of both  
11 the Government and others planning the use of the  
12 Mackenzie Valley between Fort Simpson and Inuvik to  
13 get together in a crash program to determine an  
14 optimum route for the corridor -- a route that would  
15 define the location of all utilities and facilities ,  
16 including the road that are likely to be located  
17 in the valley. The road should be set only  
18 after all the aspects have been considered and  
19 inputs from all affected disciplines have been  
20 received so that the ultimate objective can  
21 be achieved. Only in this way can an optimum balance  
22 be obtained among the economic, environmental, engineering,  
23 conservation and sociological factors affecting the  
24 decision."  
25  
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Wilimovsky, Craik, Gourdeau,  
McTaggart-Cowan  
In Chief

1  
2 Today some 2 1/2 years later  
3 we are unaware that any such program took place or that  
4 any such plan was developed. When you invited us  
5 to address looping, we must point out that looping is  
6 not what we evaluated. To us looping is the beginning  
7 of that series of developments which can be foreseen  
8 and for which we have recommended the urgent preparation  
9 of a land use plan. Looping the line immediately after  
10 construction raises a very serious concern, namely,  
11 the time span over which disturbance will occur is  
12 greatly increased, and this could well change many of  
13 our predicted minor impacts to major or severe impacts.

14 Turning for a moment to a  
15 hot oil line, and a matter of gravest concern to us,  
16 that of a multi-facility east-west corridor across  
17 the Yukon to Alaska. The two things, the oil line  
18 and the east-west corridor,--and again I would like to  
19 quote from our letter -- this is the letter to the  
20 Director of the Environment-Social Program:

21 "We are exceedingly concerned that the govern-  
22 ment should be requesting comments on a multi-  
23 facility corridor across the Yukon at such an  
24 early stage. From our observations of the  
25 Mackenzie Valley corridor concept, it is  
26 reasonable to assume that the acceptance of  
27 a multi-facility corridor is implicit in the  
28 acceptance of any one of the facilities that  
29 will utilize the corridor. That is whichever  
30 is planned, designed, and built first will



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determine the eventual route of the corridor.

The Board is of the opinion that a multi-facility corridor within the constraints of present knowledge could have a most serious and far-reaching effect on the environment of the Yukon region, and at this time should not be accepted. Our recommendation, therefore, follows that a corridor across the Yukon as separate from a gas pipeline should not be contemplated until the public convenience and necessity are established publicly, and the sociological, engineering, economic, and environmental effects have been evaluated.

We believe also that the public testing should apply to both public and private sectors, since at the present there is no mechanism other than Parliament for testing of developments by the public sector. Parliament should not be expected to devote the time needed to debate such details. It should be given the results of the deliberations of public testing for acceptance, rejection or amendment."

We started with a working hypothesis for the gas pipeline that it was possible to build it with an acceptable level of impact, and we developed, defined, and tested the level of performance required by both the applicant and the government to achieve this. When confronted with a



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McTaggart-Cowan  
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1  
2 hot oil line, the hypothesis may well be that it is  
3 not possible to build one with what to us is an accept-  
4 able level of impact. This is as we see it now,  
5 without even knowing whether it will start at Prudhoe  
6 Bay or Richards Island, without a well thought out  
7 route, taking into account possible oil spills, time  
8 of the year of construction, or other things that are  
9 included in a project description.

10 You will recall on Monday we  
11 talked of the difficulties we faced in obtaining a  
12 project description. I mentioned that we were working  
13 with a vision of a gas pipeline from Prudhoe Bay,  
14 Alaska, to Alberta. Unfortunately, you, sir, are now  
15 in a similar situation. We do not, however, accept  
16 the inevitability of a hot oil line. Neither do we  
17 accept the looping immediately following construction  
18 of the proposed gas pipeline.

19 Furthermore, we do not  
20 accept a corridor concept to cross the Yukon along  
21 either of the proposed gas pipeline routes.

22 While we do accept the concept  
23 of a Mackenzie Valley corridor, every item to go within  
24 that corridor must be tested. One item cannot be used  
25 as an excuse for another, neither can acceptance of  
26 a single item within a corridor mean acceptance of  
27 everything, anything and everything else that comes  
28 along.

29 We earnestly believe that  
30 the people of tomorrow should and must be left options





Templeton, Adam, Bliss,  
Wilimovsky, Craik, Gourdeau,  
McTaggart-Cowan  
In Chief

1  
2 for what will go into such a corridor. Thus all  
3 decisions or commitments should not be made now. We  
4 must minimize impact now, and maximize our options  
5 for the future.

6 The point we are making is  
7 that today there is an application for a gas pipeline  
8 and a hot oil pipeline -- and talk of a hot oil pipe-  
9 line. Tomorrow there will be talk of power projects,  
10 roads and railroads. We believe that those people who  
11 examine such future projects will want to look back  
12 and determine what was the actual impact of this  
13 project. They will decide whether they can accept the  
14 additional impact of the project before them on top  
15 of that which will result from this gas pipeline.  
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Templeton, Adam, Bliss,  
Wilimovsky, Craik, Gourdeau,  
McTaggart-Cowan  
In Chief

We do not feel that we should decide for them. If you consider the looping to be an integral part of this gas pipeline project, our reaction, sir, is that we do not think you have received from the applicant a project description from which we can predict environmental impact. Neither do you have a comprehensive assessment based upon documented research of the expected effects of the project upon the environment, as are required of the application by the 1972 pipeline guidelines.

Mr. Commissioner, I'm<sup>not</sup> sure that we answered your question, but we tried. That is the end of our presentation.

THE COMMISSIONER: Thank you, Mr. Templeton.

Mr. Goudge, I understand the agreement among counsel was that no questions would be put at this time. Is that the situation?

MR. GOUDGE: If that's suitable, sir, yes. We've discussed this amongst counsel who participate regularly and I've discussed it with Mr. Templeton, and some at least of the members of his panel, and they're content, subject to what you say, sir, to being recalled at times that seem suitable. We contemplate not then commencing any cross-examination of them now.

THE COMMISSIONER : All right. Well, thank you very much, Mr. Templeton, and Dr. Adam and Dr. McTaggart-Cowan, Dr. Wilimovsky, Mr. Craik,



Templeton, Adam, Bliss,  
Wilimovsky, Craik, Gourdeau,  
McTaggart-Cowan  
In Chief

1  
2 Dr. Bliss and Mr. Gourdeau. We're all grateful to  
3 you for sharing your experience and knowledge and  
4 judgment with us, and I certainly appreciate your  
5 persuading your colleagues at the counsel table to  
6 set aside three days so that you could give us this  
7 very useful presentation, Mr. Templeton.

8 As Mr. Goudge has said,  
9 everyone at this Inquiry who gives evidence, as you  
10 gentlemen have, is sworn, and so it may be that some  
11 of you will be asked to return to be questioned by  
12 counsel for the pipeline companies, Canadian Arctic  
13 Resources Committee, the native organizations, or  
14 by Commission counsel, or by the Northwest Territories  
15 Chamber of Commerce, or by the Northwest Territories  
16 Association of Municipalities, all of whom are  
17 participating. So I think that all we can do is ad-  
18 journ until nine in the morning.

19 (WITNESSES ASIDE)

20 MR. GOUDGE: I would suggest  
21 that, sir. I didn't mean to convey any implication  
22 that there was little likelihood of cross-examination  
23 of these gentlemen at some time. I think the reverse  
24 is true, and I look forward to seeing them all again,  
25 perhaps at length, at some later date.

26 In terms of our schedule,  
27 sir, if we could adjourn until tomorrow morning at  
28 nine, I think Mr. Horte will be here then, and his  
29 cross-examination could perhaps be resumed then.

30 THE COMMISSIONER: Well, fine.





1 Well, thank you again then,  
2 Mr. Templeton, and we will look forward to seeing many  
3 of you again, and if there is any tea or coffee, I  
4 invite you to stay for tea or coffee and to stay for  
5 the rest of the week, if your important work elsewhere  
6 doesn't whisk you away on the plane. Friday afternoon  
7 here, you know, that's what usually happens, the law-  
8 yers get pretty restive, and so we'll adjourn till nine  
9 in the morning.

10 MR. GOUDGE: I should remind  
11 Mr. Templeton that there's a meeting of counsel tomorrow  
12 afternoon, in any event.

13 MR. TEMPLETON: I've really  
14 progressed, now he's inviting me to the meetings of  
15 counsel, haven't I?

16 THE COMMISSIONER:  
17 You have done  
18 extremely well. But we're waiting for you to invite  
19 counsel to a meeting of engineers. So we'll adjourn  
till tomorrow.

20 (PROCEEDINGS ADJOURNED TO JUNE 5, 1975)  
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## MACKENZIE VALLEY PIPELINE INQUIRY

IN THE MATTER OF AN APPLICATION BY CANADIAN ARCTIC  
GAS PIPELINE LIMITED FOR A RIGHT-OF-WAY THAT MIGHT  
BE GRANTED ACROSS CROWN LANDS WITHIN THE YUKON  
TERRITORY AND THE NORTHWEST TERRITORIES FOR THE  
PURPOSE OF THE PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND  
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,  
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE  
PROPOSED PIPELINE;

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

June 5, 1975.

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PROCEEDINGS AT INQUIRY

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VOLUME 49

CANADIAN ARCTIC  
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APPEARANCES:

Mr. Ian G. Scott, Q.C.	
Mr. Stephen T. Goudge,	
Mr. Alick Ryder and	
Mr. Ian Roland	for Mackenzie Valley Pipeline Inquiry;
Mr. Pierre Genest, Q.C.	
Mr. Jack Marshall,	
Mr. Darryl Carter, and	
Mr. John Steeves	for Canadian Arctic Gas Pipeline Limited;
Mr. Reginald Gibbs, Q.C.	
Mr. Alan Hollingworth	for Foothills Pipelines Ltd.;
Mr. Russell Anthony,	
Prof. Alastair Lucas	for Canadian Arctic Resources Committee;
Mr. Glen W. Bell and	
Mr. Gerry Sutton	for Northwest Territories Indian Brotherhood and Metis Association of the Northwest Territories;
Mr. John U. Bayly	for Inuit Tapirisat of Canada and the Committee for Original Peoples' Entitlement;
Mr. Ron Veale and	
Mr. Allen Lueck	for Yukon Native Brother- hood;
Mr. Carson H. Templeton	for Environment Protect- ion Board;
Mr. David Reesor	for Northwest Territories Association of Muni- cipalities
Mr. Murray Sigler	for Northwest Territories Chamber of Commerce

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1 Yellowknife, N.W.T.

2 June 5, 1975.

3 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

4 MR. GOUDGE: Mr. Commissioner,  
5 could we resume, please? Mr. Horte has returned and  
6 counsel are prepared to resume their cross-examination  
7 of him. Mr. Anthony advised me just before we began  
8 that he wishes to reply to an undertaking, and perhaps  
9 the day could be led off with that.

10 I think after that Mr. Gibbs  
11 has returned, his mathematics intact, and perhaps he  
12 then could be re-inserted in the batting order and  
13 our contemplation is, sir, that he would be followed  
14 by Mr. Anthony.

15 THE COMMISSIONER: All right.  
16 Well, before that, I have an announcement to make.

17 The Inquiry will be adjourning  
18 tomorrow, Friday, June 6th, for two weeks. I am going  
19 to take advantage of the break to visit Old Crow Flats  
20 and the Yukon and then to visit Alaska. I will be  
21 going to Old Crow tomorrow, Friday, June 6th, on the  
22 4:30 plane, to see the muskrat trapping grounds and  
23 Old Crow Flats at the invitation of the people of Old  
24 Crow. If the pipeline does not follow the prime route,  
25 so as to avoid the Arctic National Wildlife Range in  
26 the North Coast of the Yukon, then it will follow the  
27 interior route. The interior route goes by Old Crow  
28 Flats, the trapping grounds of the people of Old Crow.

29 I will be travelling from  
30 Old Crow to Alaska on June 8th. The pipe for the



1 Alyeska Pipeline is just now starting to be laid in  
2 Alaska. It should be possible to get some idea of  
3 what the impact has been so far with the pre-construction  
4 and construction activity there. The Inquiry  
5 will in due course be hearing the evidence of witnesses  
6 from Alaska later in the year, but in the meantime  
7 I want to see for myself what is going on there.

8 In Alaska I will be going to  
9 see the oil and gas fields at Prudhoe Bay. I will  
10 also visit the native Village of Copper Center to see  
11 what the impact of the project has been there. I  
12 will be going to Anchorage, Fairbanks and Valdez for  
13 the same purpose.

14 The Arctic Gas Pipeline  
15 proposal under consideration at our Inquiry here in  
16 Canada is to build a gas pipeline. The Trans-Alaska  
17 Pipeline is an oil pipeline. While the environmental  
18 impact of an oil pipeline may be in some respects quite  
19 different from that of a gas pipeline, the social and  
20 economic impact is likely to be similar. The consequences  
21 of a great influx of construction workers and  
22 the importation of hundreds of thousands of tons of  
23 pipe, fuel, equipment and material would be similar in  
24 many respects, whether the pipeline is an oil pipeline  
25 or a gas pipeline, and whether the pipeline is being  
26 built in Alaska or Northern Canada.

27 Mr. Anthony?

28 MR. ANTHONY: Mr. Commissioner,  
29 I would like to reply to an undertaking by C.A.R.C.  
30 May 15, 1975, found at page 5091, line 2, Volume 39.





1 I will just read the section that raised the question  
2 and then my reply, page 509I.

3 "MR. MARSHALL: Mr. Scott, if I might just  
4 before you go on, the mention was made again  
5 of Alaska. Earlier this morning there was  
6 a statement made by Professor Lucas about  
7 snow roads on the Alyeska project, and on  
8 checking that during the break I find that  
9 our information seems to be that there were  
10 never any snow roads proposed for use on the  
11 Alyeska project, and I wonder if perhaps  
12 Professor Lucas might at a later date clarify  
13 that?"

14 And Mr. Scott said:

15 "Any snow roads, or a few?"

16 Mr. Marshall went on:

17 "I am instructed that their proposal didn't  
18 call in the first instance or at all for any  
19 snow roads.

20 MR. LUCAS: I'll undertake to check that with  
21 our consultant, who is in fact one of the  
22 consultants for the governmental agency  
23 overseeing the construction of the Alyeska line."

24 That matter has been checked  
25 out with the consultant, who advises that north of  
26 Galbraith Lake on the North Slope of Alaska there the  
27 haul road is not immediately adjacent to the right-of-  
28 way and for a distance of 140 miles there was a proposal  
29 for snow road construction. Subsequently it was decided  
30 that there was not sufficient snow to carry on the



V.L. Horte  
Cross-Exam by Gibbs

1 project, and it was decided not to proceed. But there  
2 was -- that is the location and that was the original  
3 proposal.

4 Now I might say for both my  
5 friend and for the Inquiry that we intend to call Mr.  
6 Skinnarland in Phase 1, and at that time we'll have  
7 an opportunity of exploring this issue further. I  
8 did want to please get it on the record at this  
9 stage.

10 THE COMMISSIONER: Thank you,  
11 Mr. Anthony. Mr. Gibbs?

12 MR. GIBBS: Mr. Commissioner,  
13 I have got, I guess, to review with Mr. Horte some  
14 mathematics which I undertook to engage in  
15 during the past few days, and I propose to confine  
16 my cross-examination to this mathematical exercise.  
17 Could the witness please be provided with Sections 10  
18 and 11, entitled:

19 "Cost of facilities and pro forma financial  
20 statements"?

21  
22 VERNON L. HORTE, resumed:

23 CROSS-EXAMINATION BY MR. GIBBS (CONTINUED):

24 MR. GOUDGE: It has not been  
25 filed Mr. Gibbs, is that correct?



1 MR. GIBBS: I understand it not yet to  
2 have been marked in the proceedings, sir. It is --  
3 the opening part of this volume is entitled  
4 "Supplicant to Application of Canadian Arctic  
5 Gas Pipeline Limited." It is signed by W.P.  
6 Wilder, Chairman, in Toronto on November 14, 1974.

7 MR. MARSHALL: I am sorry,  
8 Mr. Gibbs, it not being an exhibit, we didn't bring  
9 it down this morning. Mr. Carter will get a  
10 couple of copies of it.

11 MR. GIBBS: Well, I could  
12 start the opening portion until the witness gets it.

13 Q Mr. Horte, as I recall  
14 our previous exchanges, is your opinion now that all  
15 of the Canadian gas from the Beaufort Basin will go  
16 to Canadian markets?

17 A That is my opinion,  
18 sir.

19 Q And would it be correct  
20 to say that it is also your opinion that it will  
21 go to Canadian markets through Empress, Alberta?

22 A Well, I think it  
23 quite likely that some of it may go to the west coast,  
24 B.C. markets as well.

25 Q Do you have any opinion  
26 as to the amount that will go west and the amount  
27 that will go east?

28 A No, we have made  
29 evaluations as was -- as were set forth in the  
30 demand supply hearings before the National Energy





1 Board as to the deficiencies that we could foresee in  
2 the west coast markets and in the eastern Canadian  
3 markets and so you would contemplate with deficiencies  
4 in both areas and with new gas supplies becoming avail-  
5 able that some portion would go in each direction.

6 Q Mr. Horte, your tariff  
7 and design assumptions for your system were based on  
8 an assumption that the Alaska gas would be split at  
9 Caroline and would go 50% west and 50% east,  
10 Is that correct?

11 A Yes.

12 Q So that half would  
13 end up going to the United States at Mounce and  
14 half at Kingsgate, British Columbia.

15 A Yes -- for purposes of  
16 illustrating tariffs that would be associated with  
17 those facilities.

18 Q Yes.

19 And the then assumption  
20 was that the Canadian gas would go one-half to eastern  
21 Canada through Empress and the other half would go  
22 as to one-quarter out through Mounce and one-quarter  
23 out through Kingsgate --

24 A For the purposes of  
25 those tariff calculations, yes.

26 Q Yes, but now you don't  
27 see those volumes going out at Mounce and Kingsgate?

28 A No I don't -- nor did  
29 we necessarily then. It was an illustrative schedule  
30 to show what the effect on tariffs would be.



V.L. Horte,  
Cross-Exam by Gibbs

1  
2 Q Mr. Horte, could you  
3 get sections 10 and 11 in front of you?

4 A Yes, sir.

5 Q Mr. Commissioner, I  
6 am going to start referring to some of the numbers  
7 in here at this time and I wonder whether it should not  
8 the document should not be marked.

9 THE COMMISSIONER: Yes,  
10 I think it should be marked. -- Not on the basis that  
11 everthing said in this document is relevant to this  
12 Inquiry, but so that the record will be accurate as  
13 to these figures.

14 MR. GIBBS: Might it then  
15 be given an exhibit number, sir?

16 THE SECRETARY: 146.

17 ("COST OF FACILITIES" and PRO FORMA FINANCIAL  
18 STATEMENTS MARKED EXHIBIT 146)

19 MR. GIBBS: Mr. Horte, will  
20 you turn in Exhibit 146 to the second tab which is  
21 entitled "General Introduction".

22 A General Introduction?

23 Q Yes, sir.

24 A Yes, sir.

25 Q And the last page under  
26 that tab is a map or diagram entitled, "Canadian Arctic  
27 Gas Pipeline Limited Schematic of Pipeline Segments."

28 A Yes, sir.

29 Q There is no segment one  
30 there. I presume segment one is the portion from Prudhoe



1 Bay to the Alaska - Yukon boudary?

2 A Yes, sir.

3 Q Then segment two is from  
4 the Alaska - Yukon boundary to the Yukon - Northwest  
5 Territories boundary?

6 A Yes.

7 Q And segment three from  
8 the Northwest Territories boundary to Travaillant  
9 Lake Junction.

10 A Yes.

11 Q Segment four encompasses  
12 all of the line from the delta down to Travaillant  
13 Lake Junction.

14 A Yes.

15 Q Segment five is Travail-  
16 lant Lake Junction to the 60th parallel?

17 A Yes, sir.

18 Q Segment six is the 60th  
19 parallel to Caroline?

20 A Yes, sir.

21 Q Segment seven is  
22 from Caroline to the Alberta Saskatchewan border?

23 A Yes.

24 Q Segment eight, the  
25 Alberta Saskatchewan border to Mounce, Saskatchewan.

26 A Yes,

27 Q Segment nine, Caroline  
28 to the Alberta - British Columbia border.

29 A Yes.

30 Q And segment ten, the



V.L. Horte  
Cross-Exam by Gibbs

1 Alberta-British Columbia border to Kingsgate, British  
2 Columbia on the United States boundary.

3 A That is what the  
4 diagram shows, sir.

5 Q And on that diagram  
6 for each of those segments the mileages are shown?

7 A Yes, they are.

8 Q Mr. Horte, do you have  
9 a pad of paper in front of you?

10 A Yes, I have one,  
11 thank you.

12 Q Would you arm yourself  
13 with that and a pencil? Please.

14 A Yes .

15 Q I am going to try and  
16 go through the Mcf mile method which Mr. Brackett  
17 spoke about in the Federal Power Commission to which  
18 I referred you the last time we were opposite  
19 each other.

20 A Yes.

21 Q Will you on the  
22 extreme right hand of your piece of paper put a  
23 heading, "U.S. Miles".  
24  
25  
26  
27  
28  
29  
30





V.L. Horte  
Cross-Exam by Gibbs

1 THE COMMISSIONER: Should we all  
2 do it?

3 MR. GIBBS: Yes. If I had one  
4 of the view graphs and so on, I would put it up, but  
5 I'm afraid I haven't.

6 Q Would you next look for  
7 the heading at the top of a column, and the column  
8 heading will be:

9 "Canadian miles."

10 A Yes sir.

11 Q And would you then on the  
12 extreme left-hand put a heading for a column, and  
13 the heading will be:

14 "Segment".

15 A Yes sir.

16 Q Now, sir, with the  
17 schematic diagram in front of you, and your piece of  
18 paper, under "Segment" will you put "2"?

19 Under "Canadian Miles", 0,  
20 and under "U.S. Miles" on the schematic diagram, 134.2.

21 A Yes.

22 Q And that's in effect  
23 what segment 2 is, it carries no Canadian gas, it carries  
24 wholly U.S. gas for 134.2 miles.

25 A That's correct.

26 Q Yes. Then under the  
27 column "Segment" will you put the number "3"?

28 A Yes.

29 Q Under "Canadian Miles",  
30 0 ?



V.L. Horte  
Cross-Exam by Gibbs

A Yes.

Q Under "U.S. Miles", 162.8.

A Yes sir.

Q And that's correct?

A Yes.

THE COMMISSIONER: And that  
brings the U.S. gas to Travailliant Lake.

MR. GIBBS: Yes, it does.

THE COMMISSIONER: Yes.

MR. GIBBS: Q Then under the  
column "Segment", will you put "4"?

A Yes.

Q And under "Canadian Miles"

158?

A Yes sir.

Q That being the total of  
143.3 and 14.6.

A Yes sir.

Q And under "U.S. Miles,"  
0.

A Yes.

Q And that's a correct  
relationship?

A Yes sir.

Q Then under "Segment 5",  
under "Segment" put the number, "5"; under "Canadian  
Miles", 691.5.

A Yes.

Q And under "U.S. Miles",  
691.5.



V.L. Horte  
Cross-Exam by Gibbs

1 A Yes sir.

2 Q And that's correct?

3 A Yes.

4 Q Because both streams  
5 will go through that portion.

6 A Yes.

7 Q And under -- again under  
8 the "Segment" column, "No. 6."

9 A Yes sir.

10 Q Under "Canadian Miles",  
11 611.6.

12 A Yes.

13 Q Under "U.S. Miles",  
14 611.6.

15 A Yes.

16 Q Then under the segment  
17 column, 7.

18 A Yes.

19 Q And here, sir, I ask you  
20 to make with me an assumption because we don't know  
21 what the Canadian gas division is, and the assumption  
22 is that all the Canadian gas will go up through Empress.

23 A Yes sir.

24 Q And if that be the case,  
25 then the Canadian miles for segment 7 would be 2/3 of  
26 the -- I'm sorry, would be 234.4, because it's all  
27 going through segment 7.

28 A Yes, you appreciate that  
29 it wasn't done that way in our tariff calculation on  
30 this.





V.L. Horte  
Cross-Exam by Gibbs

1 Q Well, I'm trying to  
2 follow Mr. Brackett's method of getting the shipper  
3 miles.

4 A Very good.

5 Q And under "U.S. Miles"  
6 for segment 7, as only half of the U.S. gas is going  
7 in that direction, that should be 117.2, shouldn't it?

8 A No, it would be the same  
9 miles.

10 Q It would also be the  
11 234.4?

12 A Yes.

13 Q Well, Mr. Horte, I want  
14 to make sure we understand each other, and what concerns  
15 me is that when we get -- we have a unit coming from  
16 Prudhoe Bay and it's coming through Travaillant Lake  
17 junction, and it's coming to Caroline, and then it's  
18 going half in each direction.

19 A Yes.

20 Q So it would seem to me  
21 that the half going towards Mouncie is not a full  
22 shipper mile, it's a shipper half-mile, isn't it?

23 A On the southern end, Mr.  
24 Gibbs, what was done was as follows. Starting at the  
25 point, Caroline, and going to the two boundaries, the  
26 one to British Columbia and the one to the Saskatchewan  
27 border, the mileages for those two segments were averaged  
28 and considered as one set of mileages. In other words,  
29 for gas moving to the west or to the east, you said  
30 the M.c.f. miles associated with that was the average



V.L. Horte  
Cross-Exam by Gibbs

1 of the two. In other words you take the 234.4 and  
2 the 175.8, and you'd average the two and you'd say  
3 the distance for M.c.f. mile purposes to either the  
4 B.C. border or the Alberta-Saskatchewan border would  
5 be that average.

6 Q Well, sir, I'm told by  
7 my advisor here, who was with me when we worked this  
8 out in bushels, that it really doesn't make any  
9 difference which way you do it, that if you take it  
10 one-half of the distance from Caroline to Saskatchewan  
11 and one-half of the distance in segment 9, you end up  
12 really with the same number.

13 A If you took half of  
14 each, yes, you would.

15 Q Yes.

16 A If you add the two to-  
17 gether and divide by two.

18 Q Yes. Then if you get  
19 -- if we go back to the line segment 7 --

20 A Yes.

21 Q -- can't we then put under  
22 "U.S. miles", 117.2, which is half of segment 7?

23 A Well, I'll put that  
24 down and let's see where you're going.

25 Q All right. Then in  
26 segment 8 --

27 THE COMMISSIONER: Well, Mr.  
28 Gibbs, under "U.S. Miles" opposite segment 7, what  
29 figure should we put down?

30 MR. GIBBS: 117.2.



V.L. Horte  
C ross-Exam by Gibbs

1 THE COMMISSIONER: Oh, all  
2 right.

3 MR. GIBBS: And then for  
4 segment 8, as only half of the U.S. gas is going  
5 through segment 8, there is zero Canadian miles and  
6 80 U.S. miles.

7 A Yes, I've written that  
8 down.

9 Q And then under segment 9,  
10 --

11 A Well, let's see.

12  
13 Half of 175.8, you're not being  
14 as precise on that last one.

15 Q No, segment 8 of the  
16 160 miles, and half of that is 80. That's to Mouncie.  
17  
18  
19  
20  
21  
22  
23  
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30





1 A Sorry, I am looking at  
2 the wrong place.

3 Q Then if you take  
4 segment nine, under the colume "segment", that is  
5 0 Canadian miles, and 87.9 U.S. miles because half  
6 of the U.S. gas is going that direction. -- And  
7 then under segment 10, 0 Canadian miles and U.S.  
8 miles 52.6, again because it is half the U.S.  
9 gas.

10 Now, I know, sir, that some  
11 of the gas is to be dropped off into Alberta Natural,  
12 but I am told that that is such a small variation that  
13 it doesn't really matter in this calculation.

14 A Okay, sir.

15 Q Now, sir, if you take the  
16 totals of Canadian miles, you get 1,695.5.

17 A I am sorry, would  
18 you repeat that number?

19 Q 1,695.5.

20 A Yes.

21 Q And if you total U.S.  
22 miles you get 1,937.8.

23 A Yes.

24 Q And if you then, as  
25 Mr. Brackett says, add the two together to get the  
26 total U.S. miles, those two last figures added together  
27 come to 3,633.3. -- You see, you --

28 A I don't -- you know, I  
29 here -- I am not quarreling with your addition. I  
30 just don't understand this particular approach or where



1 you are going with it, because you are mixing Mcf's  
2 and miles. Now, what I thought you would first do is  
3 arrive at the mileage for each and then multiply  
4 the miles by the Mcf's in each, because that is  
5 how you go about the Mcf mile approach, and what  
6 you have done here in some -- in part of it, is  
7 to put in, for instance on six -- or line segment  
8 five, / <sup>where</sup> part of that gas is Canadian gas and part  
9 of it is U.S. gas, you put on both sides of the  
10 column 691.5 miles. When you get to the  
11 southern part you divide the mileage by the amount of  
12 gas going in the respective areas, so you have got  
13 a mixture here already, as I see it, of Mcf miles and  
14 miles. So, it is very confusing to me, I don't know  
15 where you get to from this, -- this certainly isn't  
16 the way to go about an Mcf mile allocation.

17 Q Well, sir, in the  
18 preparatory words to this volume you say that in  
19 the -- on page three, that in late 1983 there will be  
20 equal volumes of delta and Alaska gas going through  
21 the system. 2 1/4 cubic billion feet from each  
22 source.

23 A Okay.

24 Q So that it doesn't matter  
25 whether you use the 2 1/4 cubic billion feet or  
26 one cubic foot. There are two units -- equal units  
27 of gas going through.

28 A All right, well, then,  
29 let me ask you this question.

30 Q Shall I be sworn, Mr.



V.Z. Horte  
Cross-Exam by Gibbs

1 Commissioner.

2 A Why when you delt with  
3 segment five, did you add the mileage of 691.5 totally  
4 to the Canadian movement and totally to the U.S.  
5 movement? Why didn't you split it 50-50?

6 Q Well, sir, I ought not  
7 be going into this debate, but I want you to be  
8 clear on what I did.

9 A And the same with  
10 segment six.

11 THE COMMISSIONER: One question  
12 at a time, Mr. Horte.

13 MR. GIBBS: Let's give  
14 the witness an opportunity, Mr. Horte.

15 Q In volume four of the  
16 official stenographers notes before the Federal Power  
17 Commission, Mr. Brackett said:

18 "We take the contractual volumes the shipper  
19 has signed up to have hauled and multiply  
20 it times the mileage those volumes were  
21 travelled."

22 All right. 662.

23 A Yes.

24 Q And if you take that  
25 one unit from the Beaufort Basin it will travel through  
26 segments four, five, six and seven.

27 A Yes.

28 Q And that gives us our  
29 total Canadian miles.

30 A Yes, it doesn't give  
us our Mcf miles, but it gives us our miles.



V.L. Horte  
Cross-Exam by Gibbs

1 Q That is what I am getting  
2 at. We have got our miles.

3 A All right.

4 Q And if you take that  
5 one unit from Prudhoe Bay.

6 A Yes.

7 Q It travels through segments,  
8 two, three, five, six and then at the end of six it  
9 splits, it goes half in each direction.

10 A Yes, but if you are going  
11 on miles now ;you should add those two mileages  
12 together. You shouldn't be dividing them by two.  
13 You should add the 117. -- or the amount for each  
14 segment together if you are talking about miles.  
15 Now, when you multiply those mileages by Mcf's you  
16 get the Mcf mile. You are mixing apples and  
17 oranges as I see it. You are arriving at Mcf miles --  
18 trying to arrive at Mcf miles by assigning mileages,  
19 which I don't understand.

20 Q On the basis as there  
21 is only one unit travelling, it doesn't matter whether  
22 you multiply it by one per mile or two and a quarter  
23 per mile. 2 1/4 billion through that system. It  
24 will end up the same, won't it?

25 A I think you may be correct,  
26 yes sir. I would like to think about that.

27 Q Then can I come back  
28 to my total of 3633.3. -- And following what Mr.  
29 Brackett --

30 A For total -- what you would





1 call the equivalent of Mcf miles although it  
2 has really been done on a mile basis.

3 Q It is a total yes,  
4 Mcf miles.

5 A Okay,

6 Q And it's 3633.3.

7 A Yes, sir.

8 Q And then Mr. Brackett  
9 says you take each shippers proportion of the  
10 total and I take that and I work out the percentage  
11 and the Canadian miles is 46.7% of the total.

12 A Yes.

13 Q And the U.S. miles are  
14 53.3% of the total.

15 A Yes.

16 Q Now, sir, the time  
17 comes to convert this to dollars.

18 A Yes.

19 Q I couldn't find a cost  
20 breakdown in dollars except under the engineering format  
21 in this volume, so I used that, because cost of  
22 service is a function of capital cost is it not?

23 A Yes, sir.  
24  
25  
26  
27  
28  
29  
30



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Cross-Exam by Gibbs

1 Q So if you turn then to  
2 the tab "Detailed schedules", and look at page 15 under  
3 that tab --

4 A Yes sir.

5 Q -- you will see that  
6 that is headed:

7 "Line segment summary, construction years,  
8 direct cost, base case, unescalated, total  
9 \$4,082,270,000."

10 A Yes.

11 Q Then, sir, I've divided  
12 that on the basis of those mileages and found that  
13 46.7% of that, which is the Canadian portion, is  
14 I,906,420,000.

15 A Would you repeat that  
16 number, please?

17 Q \$I,906,420,000?

18 A Yes.

19 Q And the U.S. --

20 THE COMMISSIONER: Excuse  
21 me, Mr. Gibbs, forgive me, but just so I try to  
22 keep up with you, that 4 billion is the cost of  
23 construction within Canada, is it?

24 MR. GIBBS: Yes sir. That is  
25 the direct unescalated, that's 1974 dollars cost of  
26 construction but --

27 A I think it is, sir.

28 Q -- there are some  
29 items not included which are included in your pre-  
30 liminary document, but it was not broken down into



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1 segments.

2 A Yes, I think this was  
3 the total unescalated cost of the Canadian facility.

4 Q And if you apportion  
5 those then along the Canadian and U.S. miles we worked  
6 out, the division of that 4 billion would be 1,906,420,000  
7 Canadian, and 2,175,850,000 U.S.

8 A Yes.

9 Q Now, sir, --

10 THE COMMISSIONER: Two  
11 billion eight hundred and what?

12 MR. GIBBS: 2,175,850,000 U.S.

13 Q Now that's on the basis  
14 of what I, and I'm not intending to be facetious,  
15 what I call the Brackett M.c.f. mile method.

16 Now then, sir --

17 A Well, no, it isn't  
18 because, you know, it's done on a total cost of  
19 service and the annual cost of service multiplied by  
20 a factor which is arrived at on an M.c.f. mile basis,  
21 and you're substituting capital.

22 Q Yes sir.

23 A For cost of service, and  
24 you know, I don't know where you're going with that.

25 Q Well, I'm going to lead  
26 you on a little farther. I tell you why I did it,  
27 because I could find no segment breakdown for cost  
28 of service so I had to do it by capital, and you can  
29 lead, I'll suggest to you in due course, from capital  
30 into cost of service.





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1 A Well, it's a major seg-  
2 ment, the cost of service; it isn't total cost of  
3 service.

4 Q Now, Mr. Horte, and --

5 A One other comment, sir,  
6 before you do go on, on the M.c.f. miles, as you've  
7 calculated them, really on a mileage basis on segment  
8 7 where you're taking the Canadian gas from Caroline  
9 to Empress, and we put down 234.4 miles, that really  
10 isn't the mileage assigned to that movement. That  
11 mileage is 50% of 234.4, plus the mileage associated  
12 with segment 9.

13 Q Well, that would --

14 A So it's -- that puts  
15 a higher M.c.f. mile charge against the Canadian  
16 situation than in fact has been used in the cost  
17 of service calculation in arriving at the estimated  
18 tariffs.

19 Q Well, it would make a  
20 minor change in the percentage division from 46 to  
21 56.

22 A Yes, it would put a  
23 lesser percentage on the Canadian, and therefore a  
24 greater share of the total on the U.S.

25 Q Yes, well when we  
26 finish this exercise I think you will find that that  
27 would aggravate the circumstance.

28 Now, sir, with your permis-  
29 sion, I want to go through this exercise again on  
30 another piece of paper on an actual allocation method



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1 so that we will end up seeing what the difference is  
2 on allocating the system rather than taking an M.c.f.  
3 mile basis, and coming to the point which I tried to  
4 arrive at previously, that in effect the Canadian  
5 consumer is subsidizing the U.S. transportation cost.

6 A You know, you can do  
7 lot of calculations on this and many arguments can  
8 be presented both ways, and I don't know what your  
9 results are going to show when you get done but I  
10 would say this, that any project -- and that's how  
11 M.c.f. miles has historically been adopted by the  
12 regulatory bodies -- has come about as the best way  
13 to equate these things. For instance, you could say  
14 that without Canadian gas the cost to U.S. shipper,  
15 regardless of how this allocation specifically comes  
16 out, would be much higher; or conversely, without  
17 Alaska gas, as we've already stated, we don't think  
18 that it would be economic to even put the project  
19 together at this point in time. So these are other  
20 factors that weigh on the equitability, if you like,  
21 of the particular method of allocation.

22 Q Mr. Horte, you asked  
23 in the beginning of that speech where I was taking  
24 you, and I'll tell you, that by the time we finish  
25 these mathematical calculations, the conclusion will  
26 be that the Canadian consumer is subsidizing the  
27 U.S. transportation to the extent of something in the  
28 range of 80 to \$90 million a year.

29 A I wouldn't agree with  
30 that at all, notwithstanding whatever your figures



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1 on the particular allocation show.

2 Q Are you ready then to  
3 go through the next set of figures?

4 A Sure.

5 Q All right.

6 THE COMMISSIONER: Just before  
7 you do, Mr. Gibbs, on segment 7 in the first set of  
8 figures, Canadian miles, 234.4; segment 7, I think, is  
9 Caroline to the Saskatchewan-Alberta border. Am I  
10 right about that?

11 MR. GIBBS: Segment 7, that  
12 is correct, sir.

13 THE COMMISSIONER: Now,  
14 Canadian miles is 234.4.

15 MR. GIBBS: Yes.

16 THE COMMISSIONER: For purpo-  
17 ses of your calculations, the U.S. mileage was 117.2,  
18 and that remains unaltered?

19 MR. GIBBS: Yes.

20 Q Mr. Horte, do you have  
21 now a new and blank sheet of paper that you can do  
22 the next set of calculations on?

23 A Yes.

24 Q And in this I'm allocat-  
25 ing the cost this time, the capital cost. On the  
26 right-hand side will you head a column:

27 "U.S. cost."

28 A Yes sir.

29 Q Next to it will you head  
30 a column, "U.S. Miles."



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A Yes.

Q Then a column:

"Canadian cost."

A Yes.

Q Then a column:

"Canadian miles."

A Yes.

Q And then a column:

"Segment."

A Yes.

Q And can we start again

with segment 2? Now, sir, I'm going to start giving you cost figures and I will tell you that they are coming from each of the segment cost pages under that tab, "Detailed schedules." They're exactly what those engineering format, direct costs, unescalated. Could you take it, sir, those --

A I'd like to --

Q I'll give you each page as we come to it.

A Very good.

Q So if you want to have as well as the schematic diagram in front of you, your finger under the tab "Detailed Schedules", you can follow exactly those numbers.

A Yes.

Q Now, under "Segment 2", from the schematic diagram, the U.S. miles are 134.2.

A Yes.

Q From page 17 under





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1 "Detailed schedules,"  
2 the capital cost, direct cost is 279 million 071  
3 thousand dollars. Page 17.  
4  
5  
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30



1 A Page 17?  
2 Q Yes, sir, under the tab,  
3 "Detailed Schedules."

4 A 297 millon?

5 Q 279 million 071  
6 thousand.

7 A Yes, right.

8 THE COMMISSIONER: That is  
9 across the northern Yukon.

10 MR. GIBBS: Yes.

11 Q So that dollar figure  
12 goes under the column "U.S. Costs", if you allocate  
13 that totally to U.S. use.

14 A Yes.

15 Q Then under "Segment" would  
16 you put three.

17 A Yes.

18 Q U.S. miles again  
19 162.8 from the schematic diagram.

20 A Yes.

21 Q And from page 18 of those  
22 direct costs, \$367,991,000 under U.S. Costs.

23 A Yes.

24 Q Now, sir, under "Segment"  
25 would you put four.

26 A Yes.

27 Q And here under Canadian  
28 miles, 158.

29 A Yes.

30 Q From the schematic diagram,



1 and from page 19 under "Canadian Costs" the figure  
2 \$254,130,000.

3 A Yes.

4 Q And nothing under U.S.  
5 because no U.S. gas is travelling there.

6 A Right.

7 Q Then under the "Segment  
8 number five, and that is the portion from Travaillant  
9 Lake Junction to the 60th parallel.

10 A Yes.

11 Q Under Canadian miles  
12 691.5.

13 A Yes.

14 Q And from page 20, and  
15 I don't want you to write this number down just  
16 yet -- from page 20, the capital is \$1,506,100,000.  
17 But as Canadian and U.S. is sharing that equally I  
18 took -- I allocated only half of that to the Canadian  
19 cost, and that would be under Canadian costs,  
20 \$753,050.

21 A Yes.

22 Q And in the same --  
23 over in the next column, U.S. miles, 691.5.

24 A Yes.

25 Q And again, the other  
26 half of the capital \$753,050,000.

27 A Yes.

28 Q All right, then under  
29 segment number six.

30 A Yes.





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1 Q -- Again it's --  
2 the segment is being shared equally between the  
3 U.S. and Canadian. So under Canadian miles,  
4 611.6 from the schematic diagram.

5 A Mm-hmm.

6 Q Under Canadian cost,  
7 half of the cost shown on the page 21 -- the cost  
8 shown on page 21 is 1,037,764,000 and half of that  
9 which should go under Canadian cost is 518,882, 000.

10 A Yes.

11 Q And under U.S. miles  
12 611.6 and the same capital cost, 518,882,000.

13 A Yes, sir.

14 Q Then under the segment  
15 column seven, and through that segment, if all of the  
16 Canadian gas, which is the assumption that we began  
17 with goes out through Empress, two-thirds of that  
18 segment will be used by Canadian gas and one-third  
19 by U.S. Do you agree with that?

20 Well, you have got four --

21 A This is in terms of  
22 Canadian gas --

23 Q Let's take it in halves.  
24 You have got four halves of gas coming down to Caroline.  
25 Two halves from Beaufort and two halves from Prudhoe.

26 A Yes.

27 Q And at Caroline,  
28 one of the Prudhoe halves goes west to Kingsgate,  
29 the other one goes east to Mouncie and the two Canadian  
30 halves go east to Mouncie, so, up to Empress the



1 Canadian gas is making use of two-thirds of the line.

2 A Yes.

3 Q All right, sir. Then  
4 under segment seven, Canadian miles, 234.4.

5 A Yes.

6 Q And from page 22, the  
7 capital on page 22 is 183,816,000 but I took two-  
8 thirds of that --

9 A Yes --

10 Q -- allocating it to the  
11 Canadian use, so under segment seven, Canadian costs,  
12 \$122,544,000.

13 A Would you repeat that  
14 number please?

15 Q \$ 122,544,000.

16 A Yes.

17 Q And then under -- for  
18 that segment, U.S. miles, 234.4 again, but only  
19 one-third of that capital cost --

20 A Yes.

21 Q -- which is \$61,272,000.

22 A Yes.

23 THE COMMISSIONER: You had  
24 the U.S. miles for segment seven as 234.4. Yet in the  
25 first chart you have them as --

26 A 117.2 --

27 MR. GIBBS: Yes, in the  
28 first one I was going on the -- what I understand the  
29 Mcf miles. Here instead I am taking actual miles and  
30 allocating the capital cost. -- And so the U.S. gas,



1 although it travels that 234.4 only uses one-third  
2 of the line, so we allocate one-third of the capital.

3 THE COMMISSIONER: Oh, I see.

4 MR. GIBBS: Then I --

5 THE COMMISSIONER: Excuse  
6 me, Mr. Gibbs, I would just like to follow you. I  
7 think that I follow you know in chart two, but  
8 I may have lost you on chart one.

9 Segment seven is from  
10 Caroline to the border.

11 MR. GIBBS: Yes, sir.

12 THE COMMISSIONER: Saskatchewan-  
13 Alberta border and tell me again why you allocate  
14 two-thirds -- oh, I see, you say both halves of the  
15 Canadian gas goes as far as Empress and then there  
16 is another split.

17 MR. GIBBS: Yes.

18 THE COMMISSIONER: Well,  
19 all right then, I understand why you charge --

20 MR. GIBBS: -- Two-thirds  
21 of the capital to the Canadian miles.

22 THE COMMISSIONER: But  
23 you split up the miles on a two to one basis on  
24 chart one and I see that you are splitting up  
25 capital costs two to one on chart two.

26 MR. GIBBS: Yes, sir.

27 THE COMMISSIONER: But on  
28 chart two, the U.S. miles you put down at 234.4 the same  
29 as the Canadian miles. Now, that is where you  
30 lose me.



1 MR. GIBBS: Well, sir, in --

2 THE COMMISSIONER: I mean,  
3 I know it travels the same number of miles, is it  
4 as simple as that ?

5 MR. GIBBS: In chart one  
6 we were taking the miles and then as Mr. Brackett  
7 says, dividing, -- he said the total cost of service,  
8 but I took the total capital and dividing it. So  
9 we didn't have this dollar breakdown per segment,  
10 because by his method you take the miles first,  
11 the Mcf miles, total them, take the proportion of  
12 one shipper of the total and multiply it times the  
13 cost of service. Now, I multiplied it against the  
14 capital costs instead.

15 But when I get to what  
16 I say is the fair allocation method, I am then alloca-  
17 ting segments of the line, they're capital, against  
18 the gas which it is carrying, so that when we get  
19 there we are carrying two-thirds of Canadian and  
20 one-third U.S. so we allocate the capital costs that  
21 way.

22 THE COMMISSIONER: Yes, I  
23 understand that.

24 MR. GIBBS: But you --

25 THE COMMISSIONER: The mileage  
26 in chart two is the same because the gas is travelling the  
27 same length of distance, but the volumes are not the  
28 same, all right, I see.

29 A I think I am having  
30 the same difficulty you are, sir.





1 MR. GIBBS: All right, then  
2 maybe we can --

3 A Well, let's go on and  
4 maybe we can sort it out.

5 MR. GIBBS: -- complete this  
6 one and get to the conclusion and then you can tell  
7 me where I went wrong.

8 A It seems to me we have  
9 mixed things together here, because we are now  
10 doing an allocation as I see it which is not consistent  
11 with the Mcf mile basis that you did on the first  
12 table.

13 Q You are correct. I  
14 that the  
15 am trying to suggest to you / fair allocation method  
16 will be of much greater benefit to Canadians than the  
17 Mcf mile method. So if we can complete this fair  
18 allocation method, then I will get to the  
19 point where we compare the two.

19 A Okay.

20 Q Under segment column,  
21 the number eight --

22 A Yes.

23 Q And no Canadian gas  
24 is going through there so you go right over to  
25 U.S miles -- 160.

26 A Yes.

27 Q And to U.S. cost from  
28 page 23,

29 A Yes, sir.

30 Q \$150,687,000.



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1 A Yes.

2 Q Then under the segment  
3 column 9 --

4 A Yes sir.

5 Q -- that is from Caroline  
6 to the British Columbia-Alberta border, nothing under  
7 the Canadian column, and the U.S. miles, 175.8.

8 A Yes.

9 Q And from page 24 under  
10 "U.S. costs", \$176,749,000.

11 A Yes.

12 Q And finally the last  
13 segment 10, from the Alberta-British Columbia border  
14 to Kingsgate, nothing under "Canadian Miles" or cost;  
15 under "U.S. miles", 105.2.

16 A Yes.

17 Q And under "U.S. cost"  
18 from page 25, \$125,962,000.

19 A Yes.

20 Q Now, sir, there we have  
21 allocated segments to gas passing through that  
22 segment, identifying the gas as U.S. or Canadian, and  
23 allocated the capital cost. All right?

24 A Yes.

25 Q Now, sir, if you total  
26 up those columns, and I had it done on one of those  
27 little button machines, so perhaps you'll accept my  
28 numbers --

29 A Yes.

30 Q -- under that last



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1 schedule you'll find under "Canadian Miles" the  
2 total to be 1,695.5.

3 A Yes.

4 Q Under "Canadian cost",  
5 \$1,648,606,000.

6 A Yes.

7 Q Under "U.S. miles",  
8 2,275.5, and under "U.S. cost", \$2,433,664,000.

9 A Yes.

10 Q Now, sir, if you compare  
11 now the sheet 1 and the sheet 2, you will see that  
12 the Canadian miles are the same, but the U.S. miles  
13 are different on the cost allocation basis.

14 A Yes.

15 Q And you will also see  
16 that under the cost allocation basis the Canadian cost  
17 is \$1,648,606,000, whereas on the Brackett method it's  
18 \$1,906,420,000.

19 A Yes, I see that  
20 difference.

21 Q And that is a difference  
22 in the Canadian capital, the capital allocated as I  
23 have done it, to the Canadian consumer, an increase  
24 between my fair allocation method and the Brackett  
25 method of \$257,814,000.

26 THE COMMISSIONER: What's the  
27 difference? I'm sorry.

28 MR. GIBBS: \$257,814,000.

29 A On your method, that's  
30 probably numbers, I assume you've calculated it





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1 accurately, that's how they turn out.

2 Q Now, it follows from  
3 that, that under the Brackett method, Canadians  
4 would pay 15% more, if you just, looking at capital  
5 only, of capital then under my fair allocation method.

6 MR. MARSHALL: Well, sir, perhaps I  
7 ought to interject here. My learned friend makes  
8 reference to the Brackett method. I think in fairness  
9 it's really his interpretation of it. Mr. Horte has  
10 agreed he's not quite sure as to the method that  
11 Mr. Gibbs is using with his chart 1, and whether or  
12 not he agrees that he's correct in the method. He's  
13 gone along with certain assumptions that Mr. Gibbs  
14 has made.

15 THE COMMISSIONER: Well, I  
16 think we should call the fair allocation method the  
17 Gibbs' method.

18 MR. GIBBS: The Canadian  
19 method.

20 Q Now, Mr. Horte, I want  
21 to try and translate that 15% greater capital alloca-  
22 tion down into the actual charges to Canadian consum-  
23 ers, and I think we can do that still from this volume.

24 A Before you do, what you've  
25 arrived at -- and I'm not necessarily agreeing with  
26 exactly how you did it -- but what you've tried to  
27 arrive at, as I understand it, is a breakdown of  
28 capital that would be attributable to an M.c.f. mile  
29 method, and a breakdown of capital apportioned on  
30 what is normally referred to in the industry as a zone



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1 gate method, and subject to your accuracy and whether  
2 those two have been done properly, there are differences  
3 that come about as a result of those two different  
4 methods.

5 Q Yes sir.

6 A And I'm not for one  
7 minute agreeing which of those is the most equitable  
8 method, and as you know, this is a matter that will  
9 be discussed at length before the regulatory body in  
10 Canada who fixes rates on pipelines with the regula-  
11 tory body in the U.S., and they will ultimately  
12 determine what they believe is the most equitable  
13 method of allocating rates. Whether that method be  
14 an M.c.f. mile method, or a zone method, or some  
15 other method, and whatever they finally decide as  
16 being the method that they would be prepared to have  
17 used for rates will be the rates upon which our  
18 company would operate if the project is approved.

19 Q Yes sir, but you have  
20 in your filings put forward the M.c.f. mile method  
21 and Mr. Brackett has testified before the Federal  
22 Power Commission as to that M.c.f. mile method, and  
23 you really can't have a different method in one  
24 jurisdiction than in the other, can you?

25 A That's right.

26 Q You must have the same.

27 A Well, you could have a  
28 certain method on the U.S. side and a different  
29 method in Canada, providing that the regulatory author-  
30 ity in the U.S. was prepared to accept in approving



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1 the project the rate method, the method of tariff  
2 charges in Canada that would be decided by Canada. So  
3 you could have different methods, one jurisdiction or  
4 the other would have to accept the methods of the  
5 other jurisdiction.

6 Q Well, sir, I just want  
7 to proceed on what you have put before the regulatory boards.

8 A We put forth, I think  
9 that's pretty clear, the M.c.f. mile method.

10 Q Yes sir, so let's  
11 proceed on what's before the regulatory bodies, and  
12 we got into this in the beginning because northerners  
13 are Canadians, and as well as any other Canadian if the  
14 Canadian is going to subsidize the U.S. transportation  
15 it ought to be known here; and I appreciate that we'll  
16 go into it in much more detail before the National  
17 Energy Board.

18 A Well, I think we can  
19 argue forever, Mr. Gibbs, and we can't decide here  
20 what you would determine as subsidization or what I  
21 might determine as subsidization. As you know, this  
22 is a very complex subject, the matter of rate-setting,  
23 and what is subsidization or what is not. The method  
24 we have used is the normal method now being used by  
25 the National Energy Board in Canada, and the Federal  
26 Power Commission. If they choose another method,  
27 that will be the method we'll use.

28 THE COMMISSIONER: Well, so  
29 that I understand where we are at, the method that  
30 Arctic Gas has used in its submissions so far to the



V.L. Horte  
Cross-Exam by Gibbs

1 National Energy Board and the Federal Power Commission,  
2 is the method that produces the allocation of capital  
3 cost that Mr. Gibbs referred to in chart 1.

4 A That is subject to whether  
5 or not that's been done properly.

6 Q Yes, subject to the  
7 additions.

8 MR. GIBBS: I am content to  
9 come back this afternoon if Mr. Horte wants to point  
10 out where my additions are wrong.

11 A Well, my point, sir, is  
12 you know, are we making this hearing here into a  
13 rate, a discussion of rates and a rate hearing as to  
14 what will be the allocation, because frankly I'm not  
15 in a position to argue all the aspects of rate  
16 determination. That's a very complex matter. There are  
17 experts who are much better qualified than I am to  
18 argue the merits of one method versus the other. About  
19 all I can do is outline the method we have utilized,  
20 why we utilized it, and explain that this will be gone  
21 into in depth before rate-setting Boards and they will  
22 ultimately have to make a determination.

23 THE COMMISSIONER: Well, Mr.  
24 Horte, I think that everybody in this room understands  
25 that. But this Inquiry has to consider under its  
26 mandate the economic impact north of 60 of this  
27 pipeline proposal. If the proposal, as presently  
28 constituted, means that northern consumers are in some  
29 measure subsidizing U.S. consumers, then the Inquiry  
30 wants to know, and I think the people who live up here





V.L. Horte  
Cross-Exam by Gibbs

1 should know. Now Mr. Gibbs is putting his questions  
2 to you on that footing. It may be that the same  
3 issue in far more detail will have to be canvassed by  
4 the National Energy Board, but for the purposes of  
5 this Inquiry I want to see if there's anything in  
6 what Mr. Gibbs is saying.

7 Now if later on you, through  
8 Mr. Genest, Mr. Marshall and Mr. Carter, want to  
9 produce evidence to show that any theory or any  
10 argument that Mr. Gibbs wishes to develop cannot be  
11 supported, I'll hear the evidence. But in the mean-  
12 time I'm anxious to know what conclusion these figures,  
13 if they are sound, should lead us to.

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1 I think we are all conscious  
2 that there are statutory tribunals in this country  
3 and the U.S., and they will do their job just as we are,  
4 all of us, in a spirit of co-operative endeavour seeking  
5 to do our job here today.

6 MR. MARSHALL: Mr. Commissioner,  
7 perhaps I might add something. Mr. Horte has  
8 indicated that we are getting into an area that involves  
9 input from various experts that would advise Artic  
10 Gas. Well, Mr. Horte does have a pretty good  
11 general knowledge in this area -- it is obvious that  
12 there are others he would call upon. We could, sir,  
13 if you would like us to, call people in this area, and  
14 it may be that Mr. Gibbs could pursue his line of  
15 questioning with those experts rather than with  
16 Mr. Horte. It might be more instructive. It seems  
17 to me that what's been building up today is a  
18 set a hypotheses and assumptions and doubts as to whether  
19 or not there is accuracy in the line of questioning  
20 and I don't really know what we end up with. It  
21 seems to me it is kind of a bit of a hodge podge  
22 with numbers that may be right, or may not be right  
23 and --

24 MR. GIBBS: Well sir, those  
25 numbers come right out of his own document. They  
26 are not hypothetical numbers or hodge podges and we  
27 are leading to a conclusion in about fifteen minutes.  
28 Now, if my friend wants to produce his financial  
29 experts to rebutt or refute this, then I think he is  
30



1 free to do so, but now that Mr. Horte, you know, probably  
2 the most experienced gas man in Canada is here, he  
3 understands these, he has had rate cases and things.

4 THE COMMISSIONER: Well,  
5 let's carry on. Certainly, Mr. Marshall, you have  
6 the right to call any further evidence and if  
7 Mr. Horte is asked questions at any stage that he  
8 can't answer then he can let us know. But I think the  
9 questions are altogether appropriate to be put to  
10 Mr. Horte. It is the theory that is being constructed  
11 at this stage. If it is unsupported by a more complete  
12 analysis of the figures then you will demonstrate that  
13 in due course.

14 MR. GIBBS:

15 Q Mr. Horte, would  
16 you now, still in that volume, turn to a tab -- there  
17 is a dark blue tab entitled "Pro forma Financial  
18 Statements", Section 11, do you see that?

19 A Yes, I do.

20 Q And under that there  
21 is a light blue tab Roman II, base case, unescalated  
22 cost.

23 A Yes, sir.

24 Q And you recall numbers  
25 I used in what I called the fair allocation were base  
26 case, unescalated cost numbers.

27 A Yes.

28 Q And under that tab  
29 Roman II, base case, unescalated costs, will you turn to  
30 schedule four, entitled, pro forma cost of service





V.L. Horte  
Cross-Exam by Gibbs

1 for the years 1979 to 1986.

2 A Yes, sir.

3 Q And on that schedule  
4 will you direct your attention to schedule G,  
5 -- column G, 1983.

6 A Yes, sir.

7 Q -- Because that  
8 is the first year when -- according to your introduction  
9 to this document, equal volumes of Caandain and U.S.  
10 gas will flow through the line.

11 A I think it is probably  
12 the following year just looking at the numbers  
13 where you build up to the full capacity of 1547.9. --  
14 1984 and thereafter would have the full volumes.

15 THE COMMISSIONER: What page  
16 are we on, Mr. Gibbs, I --

17 MR. GIBBS: Under the --  
18 do you have, sir, the Roman tab, light blue colour,  
19 base case, unescalated costs?

20 THE COMMISSIONER: Yes.

21 MR. GIBBS: And it is the  
22 fourth page, I think -- or maybe the fifth  
23 page entitled at the top, in the right hand side,  
24 "Section 11-- Schedule four -- Base Case, Unescalated."

25 THE COMMISSIONER: All right.

26 MR. GIBBS: And in the  
27 earlier -- in the introduction to this volume I  
28 referred to earlier, it was said that it was expected  
29 that in 1983 equal volumes of Canadian and U.S. gas  
30 would pass through the lines, so I took 1983 column



1 to develop these final conclusions. That is column --

2 A I don't think it is the  
3 full build up. I think the facilities are completed in  
4 the summer or the fall of '83, so part of that year  
5 has full volumes and that is why you see the  
6 1412.2 which is made of a lesser volume for part of  
7 the year and a full volume for the latter part of  
8 the year. The year 1984 would really reflect a full  
9 operating year with full volumes.

10 MR. MARSHALL: Mr. Gibbs,  
11 I think that the cost figures that you are looking  
12 at reflect a one year delay, and that is where the  
13 difference in the year comes from.

14 MR. GIBBS: Perhaps to illus-  
15 trate my point we can use that column because those  
16 are the numbers I used. Now, there would have to  
17 be some minor variation if we went to 1984, but the point  
18 will be made.

19 A Well, the point is in  
20 '84 the overall costs are reduced.

21 Q The point will be --

22 A For purposes of your  
23 allocation I recognize what you are doing, but --

24 Q All right --

25 A -- we should appreciate  
26 the total cost of service is lower at full volume in  
27 1984 than in any year prior.

28 Q Well, can we then  
29 come back and use the column 1983, because that  
30 is what I --



1 A Yes.

2 Q And under the first  
3 seven lines of that column are the cost of service.

4 A Yes.

5 Q And line one is operating  
6 expense, 44.6 million dollars.

7 A Yes.

8 MR. MARSHALL: You are under  
9 1984?

10 A -- 44.9 in '83.

11 MR. GIBBS:

12 Q I am sorry, 44.9 million  
13 dollars.

14 A Right.

15 Q As operating expense.

16 A Yes.

17 Q And I am told that that  
18 is 4% of the total cost of service for that year  
19 of 1.1 -- \$1,187,000,000.

20 A I will accept that.

21 Q Yes, -- And so inversely  
22 the cost of service really is 96% attributable to  
23 the capital cost of the project?

24 MR. MARSHALL: Well, there  
25 are other factors there for taxes and so on, Mr.  
26 Gibbs.

27 MR. GIBBS: Well, surely  
28 those are portions of the capital cost of the  
29 project, aren't they?

30 A I have forgotten for the



V.L. Horte  
Cross-Exam by Gibbs

1 moment -- maybe you could tell me whether this  
2 includes fuel costs or not -- I just have to go  
3 back through these tables and find out. I have  
4 forgotten.

5 Q Well, Mr. Horte,  
6 perhaps you could tell me whether I am right in  
7 saying that some 96% of the cost of service  
8 is attributable to the capital costs.

9 A Yes, on the fuel cost  
10 thing I recall now -- I was thinking about it,  
11 that these -- this transportation cost does not in-  
12 clude fuel cost in that it is assumed each shipper  
13 will supply his proportionate share of the fuel  
14 required out of the gas that he puts into the line  
15 so yes, you are correct on the basis of these --

16 MR. MARSHALL: Well, sir --

17 MR. GIBBS: All right, well, --

18 MR. MARSHALL: Excuse me --

19 Mr. Gibbs.

20 THE COMMISSIONER: Just a  
21 moment, Mr. Gibbs, -- Mr. Marshall --

22 MR. MARSHALL: I think you  
23 are overlooking the items that pertain to taxation,  
24 but I don't think under any system are considered  
25 to be capital items.

26 THE COMMISSIONER: Let me  
27 just ask a question and see if I understand this.  
28 Are you saying that the total cost of service in  
29 1983 is \$1,187,100,000 , and all of that except 44.9  
30 million dollars is attributable to capital cost?





1 A The depreciation and  
2 amortization certainly are directly attributable to  
3 capital. Municipal and other taxes indirectly are  
4 usually -- bear some relationship to the capital  
5 investment involved, and of course the  
6 provision for income taxes is really derived from the  
7 the overall rate of return that is permitted which  
8 includes recovery of income taxes and it is largely  
9 based on that rate of return on your rate base and  
10 therefore your capital investment. So it is --  
11 essentially what you are saying is correct. The  
12 other items are --

13 MR. GIBBS: All right, sir --

14 A -- more or less  
15 related to the fixed investment.

16 Q Well, sir, can you  
17 follow me with the next step. Taking the operating  
18 expenses at only 4% of the total cost of service in  
19 1983. I then went down to line number 14, the  
20 second line from the bottom, Mackenzie Delta to Empress.

21 A Yes.

22 Q And found under 1983  
23 the figure of 76.1¢ per Mcf.

24 A Yes, sir.

25 Q And to take out the  
26 operating cost element of that I reduced it by 4%,  
27 because that is what the operating cost element is  
28 up above.

29 A Yes, sir.

30 Q And so, if you reduced



V.L. Horte  
Cross-Exam by Gibbs

1 that by 4% it comes down to 73¢.

2 A Yes.

3 Q And that, sir, would  
4 be generally the Mcf -- the per Mcf cost  
5 attributable to capital.

6 A Yes.

7 Q Yes, sir.

8 THE COMMISSIONER: Excuse me,  
9 by taking 4% from 76.1 you get 73?

10 MR. GIBBS: Yes, sir.

11 THE COMMISSIONER: And that  
12 represents the Mcf attributable to capital cost in  
13 that year?

14 A Related to capital  
15 cost.

16 MR. GIBBS: Yes, that 73¢ is  
17 per mcf.

18

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V.L. Horte  
Cross-Exam by Gibbs

1 I took this next step, <sup>Now, sir,</sup> and here we may part company.

2 I went back to the 15%, where we derived, when we  
3 compared capital and said we developed the 15% as  
4 the amount of additional capital attributable to the  
5 Canadian use by the Brackett method over my fair  
6 allocation method; and so to convert that 73¢ to the  
7 fair allocation method, I reduced it by 15%.

8 Now is that a step that follows in logic, Mr. Horte?

9 A I'm not accepting your  
10 15%, but I follow your mathematics.

11 Q That's a progressive  
12 way to do it, and that 15% of 73¢ equals 11¢.

13 A I accept your mathemat-  
14 ics.

15 Q Now, sir, 1¢ an M.c.f.  
16 on 2 1/4 billion cubic feet a day equals 8.2 million  
17 dollars a year, does it not?

18 A I accept your mathe-  
19 matics.

20 Q And so 11¢, sir, is 90.  
21 2 million dollars per year.

22 A Give me those numbers  
23 once more, sir.

24 THE COMMISSIONER: Could  
25 you just go back again, if you don't mind? 15%,  
26 which is the difference between the two methods so  
27 far as --

28 MR. GIBBS: Between my tables  
29 1 and 2.

30 THE COMMISSIONER: Yes.





V.L. Horte  
Cross-Exam by Gibbs

1 MR. GIBBS: On Canadian  
2 capital.

3 THE COMMISSIONER: Right.  
4 15% of the 73 --

5 MR. GIBBS: Cents.

6 THE COMMISSIONER: -- cents  
7 M.c.f. is 11¢.

8 MR. GIBBS: Yes.

9 THE COMMISSIONER: Per M.c.f.,  
10 all right. Now where did we go from there?

11 MR. GIBBS: 11¢ an M.C.F.,  
12 now in that year -- and I appreciate that the flow  
13 might change for that year, but taking that year as  
14 a full buildup year -- in that year there are 2 1/4  
15 billion cubic feet per day going -- of Canadian gas  
16 going through the line.

17 MR. MARSHALL: Well, that's  
18 where you run into difficulty by your selection of  
19 the year because it doesn't work out that way.

20 THE COMMISSIONER: That's  
21 right.

22 MR. GIBBS: We appreciate there  
23 may be some minor differences.

24 THE COMMISSIONER: Well, it  
25 might even be major, but carry on with your figures.

26 MR. GIBBS: But it's still a  
27 lot of money, sir.

28 MR. MARSHALL: It's still  
29 hypothetical.

30 MR. GIBBS: And 2 1/4 billion



V.L. Horte  
Cross-Exam by Gibbs

1 cubic feet per day is 822 billion cubic feet a year,  
2 Mr. Horte.

3 A Yes.

4 Q And so 1¢ an mcf  
5 would come to 8.2 million dollars a year.

6 A Right.

7 Q And therefore 11¢ equals  
8 \$90.2 million a year.

9 A Right. If I check  
10 your mathematics.

11 Q Yes, and sir --

12 THE COMMISSIONER: Equals 90?

13 MR. GIBBS: 90.2 million  
14 dollars per year.

15 Q That, sir, comes to the  
16 end of the mathematical exercise with you, with my  
17 inviting you to agree with me, that if you use what  
18 I've called the fair allocation method, the Canadian  
19 consumers in total all across Canada would save \$90.2  
20 million per year.

21 A Well, I have to say  
22 this, I think there is something very basically wrong  
23 with your method, and I can't put my finger on it at  
24 the moment, and I think the only way of straightening  
25 this out will be to present here testimony on the  
26 two methods -- not trying to decide which is equitable  
27 and which isn't, but as I understand it from my recol-  
28 lection from our people is that the difference between  
29 the zone gate method, which is what you've tried to  
30 describe, and the M.c.f. mile method is instead of



V.L. Horte  
Cross-Exam by Gibbs

1 your 11¢, just on comparing those two methods, three or  
2 3 1/2¢ per M.c.f., not your 11¢.

3 Q Well then that's still  
4 25 of 30 million instead of my 90.

5 A That's the difference  
6 between the two methods. Now you're inferring that one  
7 is more fair than the other, and I won't buy that.

8 Q Then, sir, one final  
9 question. Isn't that cost allocation method that I  
10 call the fair allocation method, isn't that the  
11 basis upon which the trunkline charges are made to  
12 their two prime users, Trans-Canada and Alberta &  
13 Southern? Doesn't Trans-Canada pay the cost of  
14 service for the plains system, and Alberta & Southern  
15 for the foothills system, and they share the common  
16 parts?

17 A That's correct.

18 Q Yes, so it is a system  
19 in use in Canada.

20 A It is a system. The  
21 other system is the one that the N.E.B. has in use  
22 which I referred to the other day, and when you want  
23 to talk about equity of one system versus the other,  
24 you get into a very complex subject where the M.c.f.  
25 mile method has been adopted, as I understand it,  
26 for the simple reason that all facilities contribute  
27 to the total, and therefore you can't say that this  
28 particular segment has to be assigned to this party,  
29 and that segment to this party. You take the total  
30 mileage, the total M.c.f. throughput and you say, "That



V.L. Horte  
Cross-Exam by Gibbs

1 all contributes to the total package," and then when you  
2 allocate on an M.c.f. mile basis, that that is an  
3 equitable way of doing it.

4 Now there are arguments about  
5 that, but I am saying that I certainly can't buy for  
6 one minute that it is an unequitable way. There are  
7 many arguments in favor of that being a very equitable  
8 method as compared to the zone gate method.

9 THE COMMISSIONER: Well, I  
10 think you've made that point the last time you were  
11 here. You said that one of the reasons it made it  
12 equitable was that by allocating the M.c.f. miles  
13 against the total cost of service of the whole system,  
14 you were able to take into account what you say is  
15 the fact, that is that you wouldn't have a pipeline  
16 at all without the very large markets in the south.  
17 I think that was a point that you made the last time  
18 you were here.

19 Q Could I just ask you a  
20 question about the zone gate method and the total  
21 cost of service method? You said that your people  
22 had actually done the same calculations as Mr. Gibbs,  
23 and instead of a difference of 11¢ per thousand  
24 cubic feet, they came up with a difference of 3 or  
25 3 1/2¢.

26 A Yes.

27 Q Per thousand cubic feet.

28 A Yes.

29 Q So that might, if those  
30 figures are sound, take into account the -- what you





V.L. Horte  
Cross-Exam by Gibbs

1 say is the unrepresentative nature of 1983.

2 A Well, those figures would  
3 be based on full volume throughput, so I assume  
4 they're around 1984. I think the only way to clarify  
5 it, sir, would be for us to have somebody really  
6 present those figures. I am not in a position to do  
7 so, but we have people that could.

8 I think part of the difference  
9 is, and I really can't point out the problem in it  
10 myself, but when Mr. Gibbs was going through the  
11 mileage allocation that he did in the first instance  
12 I basically believe that there is a mixture there on  
13 the one end on the Canadian side he assigned the full  
14 mileage in that case in going to Empress; on the U.S.  
15 side he took a portion of each of those. Now that to  
16 me was getting into an allocation itself rather than  
17 a mileage basis. Now I may be wrong, but there seemed  
18 in my own mind there is great confusion as to whether  
19 his was a proper approach on that basis. I think on  
20 the zone gate basis, where he assigned the capital,  
21 at least I couldn't detect something being wrong with  
22 that; but on the first basis I think there may well  
23 be some errors.

24 MR. GIBBS: I think the  
25 position really is that we are somewhere between your  
26 30 million and my 90 million.

27 A No, I think that we  
28 can produce the precise figures.

29 MR. MARSHALL: You never  
30 quit, Reg.



V.L. Horte  
Cross-Exam by Gibbs

1 MR. GIBBS: I just thought  
2 the point hadn't been made. Those are all my questions,  
3 thank you.

4 THE COMMISSIONER: Well,  
5 someone has just handed me a cartoon that indicates  
6 the press didn't altogether follow this.

7 How are we fixed for tea or  
8 coffee? Well, I think we'll adjourn then for a few  
9 minutes.

10 (PROCEEDINGS ADJOURNED FOR FEW MINUTES)  
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V.L. Horte  
Cross-Exam by Anthony

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

THE COMMISSIONER: Well, you're welcome to proceed. It sounds as if there is a radio on in here or something. Well, carry on.

CROSS-EXAMINATION BY MR. ANTHONY:

Q Mr. Horte, I think perhaps my interests will be best served if we started off by ensuring that all the figures you had from this morning are well to the side.

A Yes, I've put them to the side.

Q I'd like to start, if I may, with an understanding of the cast of characters, if I could put it that way, and in your evidence you indicated the member companies of Arctic Gas at present. Based on your current knowledge, is it anticipated that all of these companies will continue as part of the operating company, that is after approval?

A I think the majority of them. I can't be sure that all of them will. It seems to me that the ones who are in the final analysis likely to remain are those companies that in fact either sell gas or purchase gas.

THE COMMISSIONER: Excuse me, Mr. Goudge, did you check up on what was going on next door?

MR. GOUDGE: Yes, there was a film going on next door. I asked them to turn the





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Cross-Exam by Anthony

1 sound down.

2 THE COMMISSIONER: Well, what's  
3 the film?

4 MR. GOUDGE: I don't know, sir,  
5 but it may be an interesting transcript.

6 THE COMMISSIONER: Well, carry  
7 on then.

8 MR. ANTHONY: Q So that I  
9 understand it fully, do you anticipate at this stage  
10 that any particular companies will be leaving, or  
11 have any indicated that they will be leaving once  
12 approval is obtained?

13 A No.

14 Q Do you have any indication  
15 of any other companies joining the operating company of  
16 Arctic Gas?

17 A No, that always is a  
18 possibility.

19 Q And the three group  
20 voting structure that you described, do you anticipate  
21 that that will continue as part of the operating  
22 company as well?

23 A No, no, the operating  
24 company, I'm sure, will operate like any company, with  
25 a Board of Directors who are responsible to the  
26 shareholders.

27 Q And as far as the con-  
28 trol of the operating company, have there been any  
29 arrangements amongst these three groups as to how  
30 that will be exercised?



V.L. Horte  
Cross-Exam by Anthony

1 A No.

2 Q And has there been any  
3 arrangement as to the number or percentage of the Board  
4 that these three groups would be holding?

5 A No. I don't know whether  
6 you read my previous testimony or not, Mr. Anthony,  
7 but I went into that in some depth to try and describe  
8 how we are attempting to obtain maximum Canadian  
9 equity ownership which will be the first step, and  
10 then having arrived at that, the remaining amount will  
11 undoubtedly have to be put up by either U.S. companies  
12 or other interests.

13 Q So the control structure  
14 that you described in detail in your evidence would  
15 apply then to the gearing up in the actual construction  
16 of the pipeline, but not beyond that.

17 A Well, the control mech-  
18 anism, if you're referring to the three different  
19 groups and the voting procedure and the study group,  
20 that is simply for planning purposes, and I would  
21 expect would continue through the period of obtaining  
22 approvals. Thereafter, we would finance and we would  
23 be operating in the normal, conventional corporate  
24 basis.

25 Q Now in describing the  
26 structure for the construction and operation of  
27 Arctic Gas, you referred to Northcan Engineering,  
28 and I'm anxious to get a little further information  
29 about this company and its operations. Was Northcan  
30 created as a joint venture for this particular project?



V.L. Horte  
Cross-Exam by Anthony

1 A I could only say that  
2 I think we were probably the primary reason for the  
3 group of companies coming together. Certainly it was  
4 not created, however, for just this project. I think  
5 they are contemplating being a group that could work  
6 for other projects, other clients as well as us.

7 Q But this grouping of  
8 companies was brought together rather recently, and  
9 their first and major project at this stage is the  
10 Arctic Gas.

11 A As far as I know, sir.

12 Q I believe your evidence  
13 was that you haven't decided on the full terms of  
14 reference of Northcan, though you did describe some  
15 of their present functions. Could you tell me what  
16 other functions you could conceive Northcan doing?

17 A Well, I outlined that  
18 we have an arrangement with them where they will carry  
19 out this planning function, if you like, in the  
20 construction area, more detailed planning of the  
21 implementation or the implementation planning associa-  
22 ted with our construction plans. <sup>Our</sup> Arrangement with them  
23 does not go beyond that, in other words we have not  
24 committed to them to use their services in the con-  
25 struction phase. That doesn't mean that we may not  
26 use their services during the construction phase.

27 Q If you were to enter  
28 into a contract with them for the construction phase,  
29 what functions would you then assign to such an  
30 organization as Northcan?



V.L. Horte  
Cross-Exam by Anthony

1                   A     Well, such an organiza-  
2     tion would be used in the construction function itself,  
3     that is under our supervision carrying out the  
4     managing of construction itself, the spreads and the  
5     various aspects that go into the physical construction  
6     of the project. Not a design function, differentiat-  
7     ing it from a design function, if you like.

8                   Q     Let me tell you what  
9     concerns me, and perhaps you can then enlighten me on  
10    that basis. We have had evidence on the construction  
11    logistics and so on from Northern Engineering Services.

12                  A     Yes.

13                  Q     And it's possible, I  
14    think, would you agree that Northcan may decide to  
15    do things differently and proceed on a different basis?

16                  A     No, Northcan cannot make  
17    any such decisions. Northcan are working as consultants  
18    to us. What they can do is review plans and make  
19    recommendations to us, but we're the ones who are in  
20    control of how this project is going to be constructed.

21                  Q     We've had evidence by  
22    Northern Engineering Services of recommendations that  
23    they will be making to you on how you should proceed  
24    with construction. Now you would then have, we see  
25    the possibility of instructions or recommendations from  
26    Northern Engineering Services and Northcan; is that  
27    not a possibility?

28                  A     Well, fundamentally we  
29    -- what Northcan is doing is looking at the construc-  
30    tion plan, which was developed by N.E.S., and working





V.L. Horte  
Cross-Exam by Anthony

1 out the details with respect to how you would imple-  
2 ment that plan. In other words, it's fine to have a  
3 plan, but then you have to work out the method by  
4 which you're going to specifically implement it.

5 Q So that the questions  
6 that we've directed to Northern Engineering about how  
7 they propose to deal with specific problems may in  
8 fact not be the way that Arctic Gas ultimately  
9 proceeds.

10 A Well, no, I think that  
11 in dealing with specific problems, maybe you could  
12 give me an example. If you're talking about engineering  
13 design and all the things that were involved in that  
14 area, and the various environmental aspects, etc. that  
15 they have gone into and they have indicated that they're  
16 going to take this precaution or that precaution, those  
17 things are just going to be incorporated into our  
18 plan, and whoever constructs it or is construction  
19 manager is going to have to live within those design  
20 parameters.

21 Q Does Northcan have its  
22 own environmental consultants?

23 A Not to my knowledge.

24 Q So the environmental  
25 recommendations and the procedures suggested by Northern  
26 Engineering Services to this Inquiry are based on an  
27 environmental engineering compromise, as we've heard,  
28 the actual implementation by Northcan would not have  
29 this environmental input and yet they may have the  
30 responsibility of making the decision.



V.L. Horte  
Cross-Exam by Anthony

1 A No, I don't follow that.

2 The implementation of any plan is going to be under  
3 the supervision and control of CAGSL. Now we certainly  
4 aren't going, having arrived at a design or a plan,  
5 then permit somebody to just go about construction in  
6 a manner which does not conform with that plan. No-  
7 body is going to make an independent decision in that  
8 area other than us.

9 Q And the Arctic Gas plan  
10 that you refer to will be as a result of advice from  
11 both Northcan and from Northern Engineering Services?

12 A We're going to take all  
13 advice, yes, in connection with the actual implementa-  
14 tion of the plan, certainly.

15 Q So the plan --

16 A And make a decision  
17 based on the best advice that we have.

18 Q Certainly.

19 A Or make decisions, I  
20 should say.

21 Q But the plan, if I can  
22 use your word, that we've been discussing with Northern  
23 Engineering Services, may not be the ultimate plan  
24 because of possible changes by Northcan. Would you  
25 agree with that?

26 A Not changes by Northcan.  
27 Changes that would be implemented would be changes  
28 implemented by CAGSL.

29 Q Right, I agree with that  
30 and I think we've been through that; but I'm suggesting



V.L. Horte  
Cross-Exam by Anthony

1 to you that the discussions we've had with Northern  
2 Engineering Services about the sort of construction  
3 and logistics plan, that on the basis of their recom-  
4 mendations to Arctic Gas may in fact be changed because  
5 of Northcan recommendations to Arctic Gas.  
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V.L. Horte  
Cross-Exam by Anthony

1 A If you are asking  
2 me this question, is the plan as we put forward in  
3 this application likely to be modified or changed in  
4 any respect, I would have to say to you that  
5 CAGSL will make those decisions. The plan we put  
6 forward is the best plan that we know of and we  
7 are putting forward that plan at this hearing.

8 It would be wrong for  
9 me to say that there may not be modifications to that  
10 plan as we go along, but it will be basically that  
11 plan.

12 Q Could you explain to  
13 me why it was found necessary to obtain another  
14 engineering consultant group, if I can use that to  
15 identify Northcan instead of expanding the personnel  
16 within those consultants at Northern Engineering  
17 Services that have now been advising you about proper  
18 plan?

19 A Well, I guess there would  
20 be two reasons, one is just the availability of  
21 people and being able to draw on more people with  
22 more expertise, the group that is in Northcan have  
23 particular expertise on large construction projects,  
24 etc., and it was felt that that they could be helpful  
25 in working out the details of the implementation of  
26 the plan that we had. It is a matter of people,  
27 if you like, and the best expertise that we could  
28 arrive at.

29 Q You have made it clear  
30 this morning and in earlier testimony that the final



1 decision with respect to the plan and the environmental  
2 protections incorporated in that plan rest with  
3 Arctic Gas.

4 A Yes, sir.

5 Q And that you will  
6 be accepting environmental advice on how to implement  
7 and the terms of that plan.

8 A Yes.

9 Q And we have had evidence  
10 about the environmental input through Northern Engineering  
11 Services.

12 Now, could you tell me if  
13 there are presently any environmental consultants  
14 reporting directly to Arctic Gas?

15 A Well, the environmental  
16 consultants that N.E.S. has on their staff are  
17 supervised directly by our people.

18 Q All right, so -- if  
19 I could just put it in a schematic term. The  
20 environmental consultants retained by Northern Engin-  
21 eering Services then provide the environmental input  
22 into Arctic Gas?

23 A Yes.

24 Q And so the environmental  
25 input that comes into Arctic Gas and reports and so  
26 on, are funneled through Northern Engineering  
27 Services?

28 A Yes, their environmental  
29 people -- well, environmental people are employed direc-  
30 tly by Northern Engineering Services, and through



V.L. Horte  
Cross-Exam by Anthony

1 Northern Engineering Services, their data is made  
2 available to Canadian Arctic Gas and is reviewed and  
3 supervised and their programs are initiated or  
4 undertaken only after they have been reviewed and  
5 approved by Canadian Arctic Gas.

6 Q Now, is it in the  
7 present plan that these environmental consultants will  
8 remain throughout the construction and operation  
9 phase?

10 A Certainly we will have  
11 environmental consultants right throughout the  
12 construction phase, yes sir.

13 Q Your present arrangement  
14 or the arrangements by Northern Engineering Services  
15 with its environmental consultants do not extend  
16 though to the construction and operation, is that  
17 correct?

18 A I can't be certain --  
19 I would have to look up the agreement. But I would  
20 certainly expect that we would want to use the  
21 same people in the implementation that we had involved  
22 in developing the plan.

23 Q And would these people  
24 also be the pool of experts from which Arctic Gas would  
25 draw its environmental inspectors that you refer to?  
26 A Yes, certainly and I think that obviously you  
27 are going to have to increase the numbers significantly  
28 from the numbers now employed.

29 Q I would like to turn  
30 for a moment to consideration of the cross-delta



V.L. Horte  
Cross-Exam by Anthony

1 route alternative --

2 A Yes.

3 Q -- and you have described  
4 in your evidence in chief in great detail the  
5 procedure that was followed there and I don't propose  
6 to dwell on that but I would like to expand your  
7 consideration a bit if I may.

8 When the initial route  
9 was selected, was the cross delta alternative  
10 raised with Arctic Gas at that time and examined?

11 A Not to my recollection,  
12 no.

13 Q When was the cross delta  
14 then  
15 alternative/first brought to the attention of  
16 Arctic Gas?

17 A Well, my recollection  
18 is that it was discussed or mentioned some time in  
19 1973 and really at that time I don't believe given  
20 much consideration to.

21 Q Well, the evidence  
22 of your consultants here earlier was that the cross-  
23 delta idea was resurrected in the fall of '73, does  
24 that sound about right from your --

25 A Yes, it does.

26 Q And was this cross  
27 delta alternative then brought to your attention  
28 at that time by Northern Engineering Services?

29 A I can't recall by who  
30 specifically -- it very likely was.

31 Q Now, up until the





V.L. Horte  
Cross-Exam by Anthony

1 time then that the cross-delta route came to your  
2 attention in the fall of '73, did Arctic Gas retain  
3 or have any environmental studies conducted on the  
4 cross-delta route as compared to the prime or interior  
5 route?

6 A Up until what time?

7 Q The fall of '73.

8 A Not to my knowledge.

9 -- Other than, you know, possibly some of our base  
10 line studies which were, you know, extended over rather  
11 a broad area, may well have encompassed -- and  
12 probably did encompass some of the environmental  
13 considerations in that area.

14 Q But you didn't have any  
15 consultants going out to the cross delta route for  
16 detailed terrain analysis, wildlife analysis or  
17 any other things like this?

18 A Well, you weren't  
19 looking at it specifically from the standpoint of  
20 a route. What I am saying is that many of the  
21 base line studies may well have extended into the  
22 delta area, -- you know, someone else I think could  
23 probably give you better information on that.

24 Q Now, again turning your  
25 attention to the fall of '73, were you similarly  
26 advised at that time that the cross delta route offered  
27 a substantial savings in construction?

28 A I don't recall spe-  
29 cifically, I think the -- to the best of my  
30 recollection the cross delta route or the idea for it



1 from whoever it came from came on the basis that  
2 if one were to go across the delta there would  
3 be a saving in total mileages of pipe involved and that  
4 this could well result in a total cost saving to the  
5 project.

6 Q And I gather it was  
7 upon this resurrection of the idea in the fall of  
8 '73 that the environmental studies that you discussed  
9 or have been carried out were initiated by Arctic Gas.

10 A I am not sure of the  
11 time of the initiation of those, sir. I do know  
12 that on -- in the first consideration of the route,  
13 we in Canadian Arctic Gas were certainly not enamored  
14 with the cross delta route, it just seemed to us  
15 looking at it in a very preliminary fashion that it  
16 could present a great deal of problems in terms  
17 of construction, operations, etc. With more work  
18 being done on that we became convinced and have become  
19 more convinced with time that from a straight engineering  
20 design and operational standpoint that the -- and  
21 construction standpoint that the route is certainly  
22 okay, if you like. We have not reached the same  
23 conclusion with respect to the environmental concerns,  
24 as I testified to a couple of weeks ago.

25 Q Now, perhaps we can go  
26 then to the Fort Simpson route change.

27 A Yes.

28 Q Now I understand that  
29 this alternative came under active consideration  
30 following the decision to proceed with the dual river



V.L. Horte  
Cross-Exam by Anthony

1 crossings, is that accurate?

2 A Yes.

3 Q And as I understand the  
4 evidence of Mr. Williams, in particular, in  
5 volume 37 , page 4710, following, if you wish to  
6 check it up at some later stage, that it was following  
7 detailed studies of the economics, shall we say,  
8 that the decision was made to move to the east side  
9 of the Mackenzie around Fort Simpson, is that  
10 your understanding?

11 A Yes.

12 That plus the fact that  
13 there didn't appear to be at least from -- on a sort  
14 of generalized or a broad basis, any environmental  
15 problems associated with such routing.

16 Q And the decision to go  
17 ahead with the Fort Simpson alternative was made by  
18 Arctic Gas?

19 A Yes, it was.

20 Q Now, I am advised that  
21 prior to that decision which<sup>was</sup> -- as the evidence indicates  
22 prompted by these various economic concerns, there  
23 was a controversy within Arctic Gas or within Northern  
24 Engineering Services between the environmentalists  
25 and the engineers with respect to the propriety of  
26 the crossing of the Liard River. Are you aware of this  
27 and was this brought to your attention?

28

29

30





V.L. Horte  
Cross-Exam by Anthony

1                   A     No, I'm not aware of  
2     that, sir. That might very well have been the case  
3     but I'm not aware of it.

4                   MR. MARSHALL: Will you be a  
5     little more specific? It will help me if you could  
6     indicate the evidence of a particular individual.

7                   MR. ANTHONY: Well, that may  
8     be evidence we will be proceeding on later. The point  
9     I'm trying to make at this stage is to determine  
10    whether there was any evidence brought to Mr. Horte's  
11    attention of any conflict with respect to the advis-  
12    ability of the original prime route crossing the  
13    Liard, and his advice was that there was no conflict  
14    as far as he was aware, and that's all I'm trying  
15    to make of that point at this stage.

16                  A     Yes.

17                  Q     Now, since this decision  
18    was then made in early '74, you then had an opportunity  
19    to conduct environmental studies on this alternate  
20    just the one summer, the summer of '74. Is that  
21    accurate?

22                  A     We've only -- that's  
23    all the opportunity we've had since then, since the  
24    decision was made to do the more detailed environmen-  
25    tal studies. Again, you know, somebody else can  
26    provide you, I think, with how much detail we had at  
27    the time the decision was made from basic base line  
28    studies done theretofore.

29                  Q     Well, you had the advice  
30    of the cost and savings with respect to the comparison



V.L. Horte  
Cross-Exam by Anthony

1 of the east side and the west side. Were you also  
2 given advice as to the environmental problems?

3 A On the broad basis that  
4 I outlined, is that looking at it our environmentalists  
5 felt that it was certainly as good as the other route  
6 from an environmental standpoint.

7 Q So I understand exactly  
8 the situation, at present the alternate around Fort  
9 Simpson is adopted and approved as the now prime  
10 route by Arctic Gas.

11 A Yes.

12 Q On the basis of the  
13 information that you had in the fall of '74, when the  
14 amendment was filed.

15 A Basically, yes.

16 Q And your advice with  
17 respect to the cross-delta alternative is you're not  
18 prepared to make that recommendation at this date?

19 A That's correct.

20 Q Now if the decision was  
21 made that for environmental or other reasons the dual  
22 river crossing would not be an acceptable technique,  
23 would it then be the policy of Arctic Gas to revert  
24 back to the crossing of the Liard on the west side?

25 A I don't know. I find it  
26 difficult to answer that question. The economics are  
27 not really, the differences between the two routes are  
28 not really a major factor, you know. On a very broad  
29 basis it seems to me that if you can avoid a river  
30 crossing, that's a desirable thing unless it's a very



V.L. Horte  
Cross-Exam by Anthony

1 costly thing to avoid.

2 MR. MARSHALL: Excuse me, Mr.  
3 Anthony, just a small point. The date of the amendment  
4 pertaining to dual river crossings in Fort Simpson was  
5 the 21st of February, 1975.

6 MR. ANTHONY: Q Given that  
7 correction, does that change anything you've said?

8 A No.

9 Q Thank you. With respect  
10 to the gas itself, your evidence has been that the  
11 fifth year maximum throughput on the lateral from  
12 Alaska from Travaillant Lake will be 4.5 billion cubic  
13 feet per day. That's the fifth year throughput, is  
14 that correct? 2.25 per day.

15 A Yes.

16 Q Now will this be a  
17 sustained throughput, or will there be seasonal  
18 variations in that throughput?

19 A No, it would be a sus-  
20 tained throughput.

21 Q Now, the evidence of  
22 Mr. Purcell was that the ability of the fields to  
23 produce the gas in the quantities that they were given  
24 was provided by Arctic Gas. Is that correct?

25 A Yes.

26 Q And does Arctic Gas  
27 currently have commitments from Alaska producers to  
28 supply this quantity of gas at the fifth year of  
29 construction?

30 A Well, Arctic Gas -- let



1 me describe that situation. All of the gas on the  
2 North Slope has not yet been committed to markets, but  
3 all except about 40% of one-third, or in other words  
4 say 15% of the North Slope<sup>gas</sup>, all but 15% of that Prudhoe  
5 Bay gas has been committed to markets. Now with res-  
6 pect to the volumes or the rates at which it would be  
7 produced, the three major producers, that is SOHIO,  
8 Exxon, and ARCO have advised us in Canadian Arctic  
9 Gas that they anticipate the producing rate to be  
10 between 2 and 2 1/2 billion cubic feet a day. That's  
11 what they contemplate as being the rate at which they  
12 would produce gas from that field.

13 Q And that would be at the  
14 time of the fifth year of operation, in other words, when  
15 you're ready to receive it?

16 A Yes.

17 Q Now my understanding is,  
18 and please correct me if this is <sup>not</sup> correct, that the  
19 amount of gas available as source gas, as distinct  
20 from cap gas, is approximately 1.02 billion cubic  
21 feet per day. Is that your understanding?

22 A Solution gas versus  
23 gas cap gas?

24 Q Yes.

25 A Depends on the rate of  
26 oil production, but on the basis of 1.2 million  
27 barrels of oil produced per day, that would be  
28 approximately correct.

29 Q And therefore the  
30 commitment of from 2 to 2.5 would then require a





V.L. Horte  
Cross-Exam by Anthony

1 commitment of cap gas from the Alaska field.

2 A Yes, it will. I should  
3 mention while the initial producing rate from  
4 the field is estimated to begin at 1.2 million barrels  
5 a day, or shortly after the commencement of production,  
6 I think the plans are to increase that production to  
7 1.5 million barrels a day, or 1.6 million barrels a day  
8 within a short period of time. So the quantity of  
9 solution gas at that higher rate would be somewhat  
10 in excess of the figure you mentioned.

11 Q But the --

12 A And the remainder would  
13 have to be gas cap gas.

14 Q Even with the new  
15 possibilities, there would still be a requirement of  
16 cap gas in order to have the throughput.

17 A Yes, there would. Just  
18 the amount would be different.

19 Q Could you tell me what  
20 percentage or amount of the natural gas is required  
21 in the chilling, compression and transportation as  
22 a whole of the gas in this line?

23 A As best I could recall,  
24 it's in the order of 9% for all the usage in terms  
25 of the horsepower, chilling, etc, to get gas to the  
26 various destination points in Canada.

27 Q That's, as I understand  
28 it, within the line. Does this include the consumption  
29 required to ready the gas for the line?

30 A No.



V.L. Horte  
Cross-Exam by Anthony

1 Q And what percentage  
2 would that be if you took into account the energy  
3 required to prepare the gas for the line?

4 A Well, the reserve esti-  
5 mates that are quoted already have deducted, in other  
6 words when we quote a figure of 24 trillion cubic  
7 feet of Prudhoe Bay gas, that is not raw gas, that  
8 is calculated to be saleable gas after deducting  
9 process, shrinkage, etc. in the field. So those  
10 reserves are equated down to a saleable gas commodity  
11 that could enter into the pipeline for the life of  
12 those reserves.

13 Q What percentage do you  
14 take then in determining the saleable gas?

15 A Well, that will vary  
16 depending on the field. For instance, in the Prudhoe  
17 Bay field there is, as I recall, about a 12% carbon  
18 dioxide content, and most of that would be removed  
19 rather than have it transported, and some other  
20 constituents, so that is what you call field shrinkage.  
21 Those things are removed. On the Canadian side, the  
22 amount of shrinkage is very minimal as compared to the  
23 shrinkage in Prudhoe Bay because it doesn't have a high  
24 CO-2 content, it doesn't have hydrogen sulphide, and  
25 it's mainly the extraction of hydro-carbons or liquids  
26 that at the temperatures of the pipeline would go into  
27 a liquid phase and disrupt the operations of the  
28 pipeline itself. So the percentages differ. Any  
29 field you go to has a different percentage of shrinkage  
30 in the field, than any other field.



V.L. Horte  
Cross-Exam by Anthony

1 Q Could you give me then  
2 the percentage of the Prudhoe Bay field?

3 A I can't give you that  
4 exactly. I could come back and give you that.

5 Q I think that would be  
6 fine.

7 A My point is that I do  
8 want you to know that 24 trillion cubic feet calculated  
9 for that field already has that deducted.

10 MR. MARSHALL: Well, sir, if  
11 I might speak to that point, it seems to me that the  
12 field shrinkage in Prudhoe Bay fields really has little  
13 bearing on this Inquiry.

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Perhaps

Mr. Anthony has a point that he wishes to make from it and if so perhaps he could expand.

MR. ANTHONY: Well, the point that I am trying to make it quite simple. The shrinkage in the line is provided as part of the application evidence. That is not the total use of reserves in order to transport that gas and there is a shrinkage in the field and I am really trying to get a handle on that figure also.

MR. MARSHALL: Well, if I understood your question, it didn't relate to that at all. Mr. Horte was indicating that in the Prudhoe Bay gas there is <sup>a</sup> substantial percentage of CO<sub>2</sub> that is taken out and that is an extraneous substance, if you like. It is not -- you can't equate that with a fuel usage for transportation of the gas through the system.

MR. ANTHONY: I recognize that, I am merely trying to get a percentage figure of what we are talking about.

THE COMMISSIONER: What is the relevance of this? Why are we spending this morning on it?

MR. ANTHONY: Mr. Commissioner, what I am attempting to determine is the use of the energy required to transport this energy from the various fields in Prudhoe Bay and from the delta to market. -- And that information I am advised is sort of necessary precursor to other evidence that we would



V.L. Horte  
Cross-Exam by Anthony

1 like to lead about the size, construction, timing  
2 and so on of this pipeline.

3 THE COMMISSIONER: All right,  
4 carry on.

5 MR. ANTHONY:

6 Q I don't know where  
7 I left that with my friend, but I believe,  
8 Mr. Horte and I understand the question with  
9 respect to the shrinkage at Prudhoe Bay and that  
10 is really the information that I would like at  
11 some subsequent time if I may.

12 A Yes.

13 Q Now, with respect to  
14 the question of looping, Mr. Horte, it is just a  
15 very simple question to start with, I would be correct,  
16 would I, in suggesting that the construction costs  
17 alone, just isolating that problem, it is cheaper to  
18 loop a line for the complete  
19 length of a line rather than constructing a seaparte  
20 line, is that so?

21 A Well, you only  
22 put in your capital as it is required by the looping  
23 process. If you were to completely duplicate the  
24 line before you had volume's of gas which would use  
25 that capacity, you would be prespending money which  
26 is a costly thing to do.

27 Q Could you tell me when  
28 the possibility of looping the line came under active  
29 consideration.

30 A Well, I don't think it



1 is under any more active consideration today than  
2 it has ever been. It is not under active consideration.  
3 It is simply a very good likelihood that having  
4 regard to the potential in the area that everybody should  
5 recognize, having regard to that potential if it is  
6 developed, the likelihood is that one line will not  
7 handle all of the gas from that area in Canada and  
8 Alaska. Now, whether that is so or not remains to  
9 be seen, but I think it would be wrong for anybody  
10 not to contemplate that as a distinct possibility.

11 Q So this could likely --

12 A But it is no active  
13 planning, in other words, we are not trying to ~~plan~~  
14 that we are going to make the loop. We still haven't  
15 got all the gas discovered or found yet that will com-  
16 pletely fill the first line.

17 Q So this good likelihood,  
18 as you described it was in fact an existing situation  
19 from the time you first planned this project?

20 A I think it is almost  
21 -- in the business, almost a -- goes without saying  
22 when you build any line into a new highly potential  
23 area that you contemplate that as being a likelihood  
24 in the future. It is no different in this pipeline  
25 than in any other.

26 Q And between the time  
27 you started this work on this line, the information you  
28 gained on reserves or anything else has not changed the  
29 balance one way or the other?

30 A No, I think it is too



V.L. Horte  
Cross-Exam by Anthony

1 early to really know what is going to happen. But  
2 we still think that the potential of the two areas is  
3 high.

4 Q And I would be right,  
5 would I in suggesting that if the demand and potential  
6 of Prudhoe Bay was to increase dramatically without  
7 a corresponding increase in demand for production in  
8 the delta, that your policy would be then to loop  
9 just the line from Prudhoe Bay down to the Mackenzie?

10 A Well, as I testified to  
11 earlier, we contemplate this project being one of  
12 being a contract carrier, and that is that we would  
13 expand the facility to move gas to markets whenever  
14 this was required in connection with additional  
15 volumes from either source.

16 Now, that is what we con-  
17 template as being our role as a contract carrier.  
18 Of course, anytime that we are to undertake such  
19 an expansion it would again have to be approved by the  
20 appropriate regulatory authorities. In other words,  
21 we don't gain any rights in the first instance in  
22 this project any more than in any other pipeline,  
23 to just continually expand, those plans have to be  
24 reviewed and approved in each instance by the regulatory  
25 authorities.

26 Q So then the concept of  
27 looping is not essential for the economic viability  
28 or any other criteria Arctic Gas wishes to use for  
29 this project?

30 A No, sir.





1 Q And therefore if there  
2 was to be, for example, an order that there would be  
3 no looping for a certain period of time or even  
4 no looping period following the construction, you  
5 would still propose to proceed with this project on  
6 that understanding?

7 A Yes, I would be  
8 very surprised by such an order, but I would think  
9 that people want to look at the situation as it  
10 develops and then make their decision rather  
11 than predetermine it.

12 Q In respect to the  
13 question of abandonment of the line. In determining  
14 the cost of the construction techniques and requirements,  
15 has Arctic Gas made any decision as to whether or  
16 not the pipe will be removed or left in the ground  
17 or how the pipeline will be dealt with following the  
18 life of the pipe.

19 A I am not sure. I don't  
20 know of that decision. There may be plans in that  
21 connection. I am trying to recall what our filing  
22 said in that regard. I honestly can't answer your  
23 question at the moment. I don't know what those  
24 plans are.

25 Q Well, if I was to  
26 suggest the filing didn't say anything about that  
27 problem would you be able to enlighten me as to  
28 current policy in that regard?

29 A No, certainly if the  
30 pipeline were abandoned I would assume that the



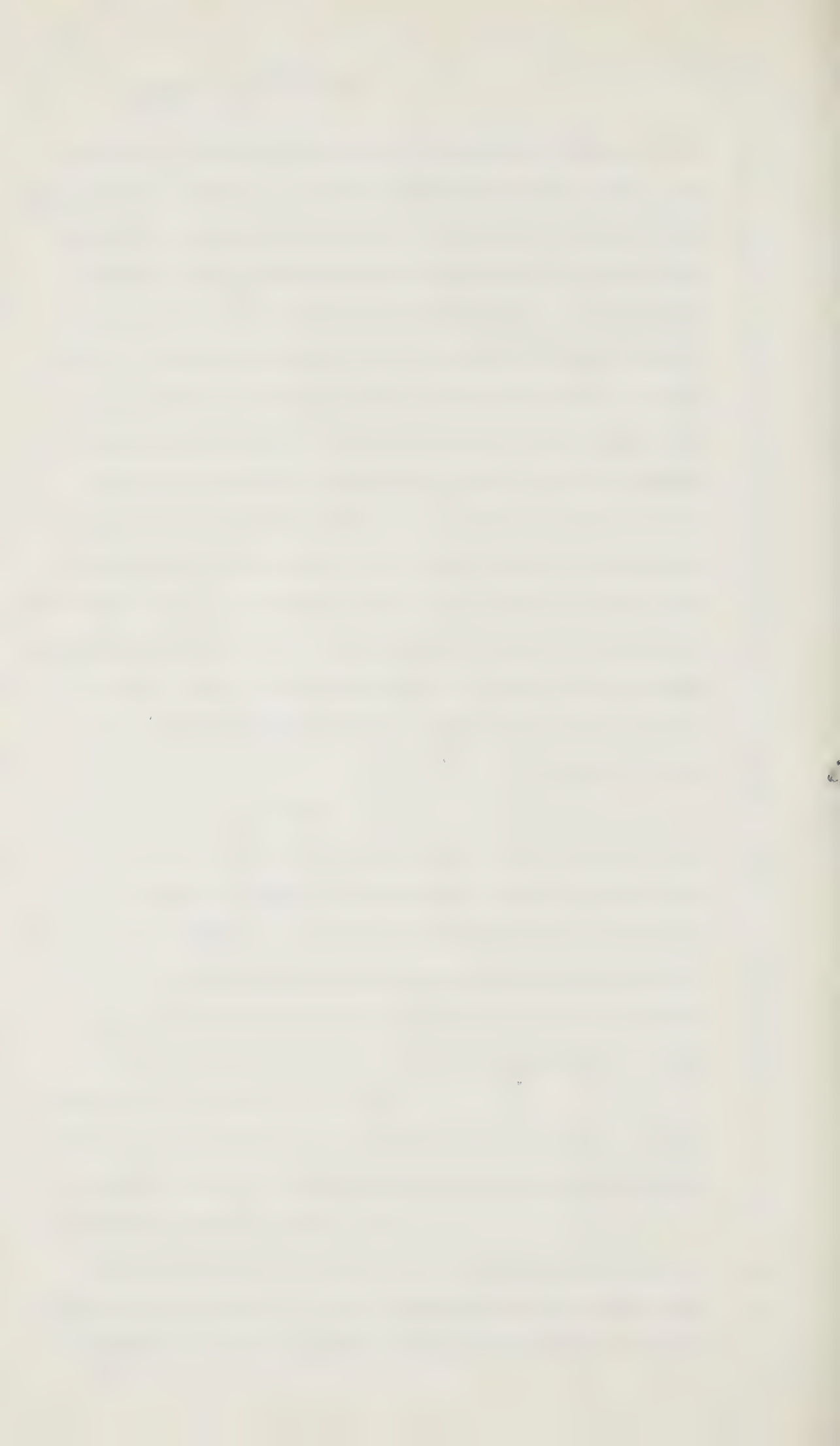
V.L. Horte  
Cross-Exam by Anthony

1 above ground facilities. would be removed, salvaged,  
2 etc. The underground facilities, I really cannot give  
3 you an answer on that. I am not too sure -- if you  
4 want an off the cuff opinion whether you wouldn't  
5 be better to leave those facilities in the ground,  
6 so you wouldn't disturb it by removing them. On the  
7 other hand there may be good economic reasons at  
8 that point, say 40 years down the road or something,  
9 maybe steel is a very important consideration and  
10 some regulatory body might decide or a commercial  
11 enterprise might decide that that were salvageable  
12 and that the worth of it was such that it was reasonable  
13 to remove it, having regard to any environmental  
14 impacts that would be associated with that removal.  
15 I just cannot give you -- to my own knowledge, a  
16 better answer than that.

17 Q Well, you see our  
18 problem here, Mr. Horte, and that we are to consider  
19 the impact of the construction, operation and  
20 subsequent abandonment of the line, are<sup>you</sup>/in the process  
21 of making any plans as to the abandonment of this  
22 line or how are we to do our job if you won't tell  
23 us what you propose to do?

24 A Well, if that is a condition  
25 that we are required to come up with and I am sure that  
26 we will put forward recommendations in that regard.

27 Q Now, in your evidence  
28 in chief, Mr. Horte, you describe the question of  
29 route selection and stated that engineering and environ-  
30 mental considerations were paramount in the question



1 of route selection --

2 A Yes.

3 Q -- and I get the impres-  
4 sion, and please correct me if I am wrong, but you  
5 are using the term "environment" there as meaning  
6 physical environment, the examination of problems  
7 of slope stability, erosion, permafrost degradation  
8 and so on. Is that what you mean?

9 A No, plus the mammal  
10 environment, fish, birds, and all the other environmental  
11 aspects.

12 Q And is your evidence  
13 then that you had this information on the living  
14 environment, if I can call it that, prior to the  
15 decision on the construction of the route?

16 A Yes, we had a great  
17 deal of input on the living environment.  
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V.L. Horte  
Cross-Exam by Anthony

1 Q Yes, but did you have  
2 information on the living environment prior to the  
3 selection of the route in early '72?

4 A We had a good deal. I  
5 think we've added to that as we've gone along.

6 Q Yes, well we have some  
7 reports and studies through the list that you've  
8 provided, and through the evidence of your witnesses,  
9 in particular in panel 1 about route selection, that  
10 they in fact did do all these terrain studies and  
11 other research. None of it predates the actual  
12 selection of the route. Now, do I understand your  
13 evidence that in fact this evidence was available to  
14 Arctic Gas before the route selection was made?

15 A Well, a great deal of  
16 it, I am sure, was incorporated right into the  
17 primary route section, and then the whole process,  
18 as you know, was reviewed again and modifications made  
19 to the route as a result of further environmental  
20 review.

21 Q Well, we've had evidence  
22 of the April '73 meeting with your environmental con-  
23 sultants.

24 A Yes.

25 Q But that, of course,  
26 was a meeting to consider environmental impact of a  
27 route already selected.

28 A Yes, but in that selec-  
29 tion there was environmental input. Northern Engineer-  
30 ing Services were carrying out route selection and



V.L. Horte  
Cross-Exam by Anthony

1 environmental studies simultaneously, and you know, those  
2 considerations were to some extent at least built right  
3 into the original route selection. In other words,  
4 it wasn't done in a vacuum, having regard to  
5 environmental considerations.

6 Q And this environmental  
7 study, dealing now with the living environment, that  
8 went into the consideration of route selection, these  
9 would have gone through to Northern Engineering.

10 A Yes, they were directly  
11 involved in those studies.

12 Q Now, besides the engin-  
13 eering and environmental considerations, would you not  
14 want to add economic considerations?

15 A Certainly, they are  
16 directly involved as well.

17 Q And wouldn't you agree  
18 that they rank right up there with the engineering  
19 considerations as paramount?

20 A Yes, I put the two  
21 together, yes, engineering and economics. It would be  
22 hard to divorce one from the other.

23 Q And we've had evidence  
24 that the Alaska portion of the coastal route is about  
25 \$550 million cheaper than the interior route.

26 A Yes.

27 Q And that, of course, goes  
28 through the wildlife range along the coast.

29 A Yes, it does.

30 Q That would appear to me



V.L. Horte  
Cross-Exam by Anthony

1 to be a situation where in fact economics ranks in  
2 fact ahead of the considerations of environment. Would  
3 you agree with that?

4 A No, because from an  
5 environmental standpoint, notwithstanding that that  
6 is a wildlife refuge, in our opinion, environmentally  
7 that route is more desirable by crossing the  
8 refuge than the interior route from a straight environ-  
9 mental standpoint.

10 Q O.K., now dealing with  
11 the Canadian portion of that lateral, could you tell  
12 me whether the route from the Alaska-Yukon border to  
13 Travaillant Lake, compare a cost comparison of the  
14 coastal and interior route.

15 A As I recall, I think the  
16 mileages on the Canadian side are longer via the  
17 coastal route than they are via the interior route.

18 Q Does that then indicate  
19 that from the Canadian portion the interior route is  
20 less costly than the coastal route?

21 A I think that's true.  
22 I would have to check that, I'm not certain.

23 MR. MARSHALL: Well, sir, I  
24 think this was gone into in very considerable detail  
25 in earlier testimony.

26 THE COMMISSIONER: Yes, <sup>the</sup> figures  
27 were given then, Mr. Anthony.

28 MR. ANTHONY: Well, I've gone  
29 through that material and I see the figures for the  
30 American portion, and then of course the total figures



V.L. Horte  
Cross-Exam by Anthony

1 are provided. But I can't make the easy subtraction,  
2 unfortunately, on the information as I am advised, and  
3 I just would like to get that point established, and I  
4 think that Mr. Horte's evidence is that the interior  
5 route, from an economic point of view, is preferable  
6 to the coastal route.

7 MR. MARSHALL: You're talking  
8 about overall, because you've indicated there is more  
9 cost involved in the interior route, or are you  
10 talking Canada only?

11 MR. ANTHONY: Dealing with the  
12 Canadian portion of the route.

13 MR. MARSHALL: I think this  
14 was dealt with explicitly by Mr. Hollingworth or Mr.  
15 Gibbs. Perhaps Mr. Gibbs could lend you his button-  
16 pusher so you could work out this.

17 THE COMMISSIONER: Well, if  
18 Mr. Horte can answer this very, very briefly, let's  
19 just do it that way and leave Mr. Gibbs out of this.

20 A Well, I suspect, but  
21 you know, the figures are available and can demonstrate  
22 whether this is so or not. I suspect, because the  
23 distance of the Prudhoe Bay lateral, if one goes the  
24 interior route, is less on the Canadian side, that  
25 probably the costs are less than on the Canadian side  
26 than they are on the coastal route; but you have to  
27 look at the total economics of the project because it  
28 encompasses gas from both areas, and I think you really  
29 have to look at the total environmental impact. I  
30 don't think you can just necessarily cut that off at





V.L. Horte  
CrossExam by Anthony

1 the border and ignore it, if we really are sincere  
2 about environmental impacts. I think we have to look  
3 at the total package. The environment doesn't recognize  
4 that border.

5 MR. ANTHONY: Q I appreciate  
6 that, and I gather then that in your application when  
7 you referred to the public interest being best served  
8 by the coastal prime route rather than the interior  
9 route, you're referring there not to the Canadian  
10 public interest as such, but the public interest on  
11 the basis of taking both the American and Canadian  
12 concerns together.

13 A I think the total  
14 environmental concern, yes, and the overall economics  
15 of the project.

16 Q Now, would I be right  
17 in saying that the interior alternative that you have  
18 proposed as an alternative was proposed because of the  
19 perceived need to go around the Arctic Wildlife Range?

20 A Yes, but we may be  
21 required to do so, we don't know that but we felt  
22 we should look at an alternate.

23 Q And therefore Arctic Gas,  
24 as a matter of policy, has prepared, if so required  
25 to go around the Arctic Wildlife Range.

26 A Yes.

27 Q Now, Mr. Horte, you  
28 personally are aware of the proposed Arctic Internat-  
29 ional Wildlife Range in Canada, are you not?

30 A Yes.



V.L. Horte  
Cross-Exam by Anthony

1 You know, in general terms I know that this is being  
2 considered by certain groups.

3 Q And you are aware, there-  
4 fore, that both the coastal and the interior route  
5 would go through the proposed Canadian portion of the  
6 Wildlife Range.

7 A I'm not sure about the  
8 interior. If you say so, if that's what's being  
9 proposed by this -- I can't recall the name of the  
10 group that is making this suggestion -- but if that  
11 is so, I'll accept that.

12 THE COMMISSIONER: Could you  
13 be a little more explicit? There's an International  
14 Biological Year Proposal. Is that the International  
15 Biological Year?

16 M R. ANTHONY: Well, there's  
17 a couple of things in the works. I'm dealing now with  
18 the Arctic International Wildlife Range, and --

19 THE COMMISSIONER: Who is  
20 proposing that?

21 MR. ANTHONY: There is an  
22 International Society has been set for purposes of  
23 establishing and shepherding it through, and it is  
24 at that stage of negotiation. I can't say --

25 THE COMMISSIONER: Is that  
26 a private International Society?

27 MR. ANTHONY: The society it-  
28 self has, I believe, government representatives, it  
29 deals with with respect to both the Canadian and the  
30 American portion, and I can say, Mr. Commissioner, that



V.L. Horte  
Cross-Exam by Anthony

1 we will be leading evidence on the range's exact  
2 size and so on, and I merely raise this point as a  
3 general content at this stage, and I think that that  
4 evidence will be coming at the Whitehorse hearing.  
5 I raise it only in a general sense to get a policy  
6 determination from Mr. Horte. So if we can accept  
7 that at this stage, that both routes do, would you  
8 then as a matter of Arctic Gas' corporate policy be  
9 prepared to go around an International Wildlife Range  
10 established in Canada just as you've been prepared to  
11 go around one established in the United States?

12 A Well, let me put it this  
13 way. We would have to look at the situation, you  
14 know. There's only so far you can go around things,  
15 and then you, you know, the project is uneconomic or  
16 it can't be put together, and you forget it, if the  
17 conditions were that severe. Then of course our  
18 position is that notwithstanding Arctic Wildlife  
19 Ranges or refuges that we be permitted to cross those  
20 under the controlled conditions that we suggest be-  
21 cause when you look at the overall environmental  
22 situation, we feel that the route we've chosen is  
23 environmentally, notwithstanding what it crosses,  
24 a preferable route from an environmental standpoint  
25 and we think that should be the prime consideration,  
26 not some magic name that's given to an area or a  
27 boundary given to something, but really what in fact  
28 is the effect on the environment.

29 Q So the establishment of  
30 an Internati onal Wildlife Range in that area would





V.L. Horte  
Cross-Exam by Anthony

1 not necessarily be determinative on the basis of  
2 policy. You will again go through the same process of  
3 evaluation of the prime environmental route.  
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V.L. Horte  
Cross-Exam by Anthony

1                   A     Yes, sir. I don't  
2 believe I could describe it better than I already  
3 have.

4                   THE COMMISSIONER: Well,  
5 I would think that Arctic Gas would be bound to  
6 look at the proposed wildlife range before making any  
7 commitment as a matter of policy. You might sketch  
8 just on a piece of paper at the luncheon break, the  
9 scope of this wildlife range just so that we have  
10 an idea of it.

11                  MR. ANTHONY: Well, Mr.  
12 Commissioner, I have a detailed --

13                  THE COMMISSIONER: It might  
14 force Mr. Horte to use the Fort Yukon route if  
15 he has to dip south far enough.

16                  MR. ANTHONY: Mr. Commissioner,  
17 I can provide you if you wish now or at some later  
18 date, a map of the Arctic International Wildlife Range,  
19 and I can, if you like, describe the general limits  
20 to you now.

21                  THE COMMISSIONER: Well, if  
22 you have a map, why don't you just hand it to me and  
23 then to Mr. Horte --

24                  Yes, I see. It goes down to  
25 -- it starts just west of Old Crow and the Porcupine  
26 River and then goes south -- really follows the  
27 Porcupine into the Northwest Territories, or at least  
28 almost there. So it would protect Old Crow flats  
29 and the whole of the coast.

30                  MR. ANTHONY: Mr. Commissioner,



V.L. Horte  
Cross-Exam by Anthony

1 I will make copies of it and will make it available  
2 to the rest of the participants.

3 THE COMMISSIONER: And  
4 when Mr. Anthony has done that, Miss Hutchinson  
5 will mark it as an exhibit this afternoon.

6 MR. ANTHONY:

7 Q Mr. Horte, you are  
8 familiar, I would presume, with the 1972 pipeline  
9 guidelines.

10 A Yes, generally.

11 Q And familiar then  
12 with the sections of the guidelines which indicate  
13 that the Government of Canada is prepared to  
14 consider application for a gas pipeline within  
15 certain identified corridors.

16 A Yes.

17 Q Now, Mr. Dau in  
18 his evidence advised us that the Arctic Gas route was  
19 selected by Arctic Gas before the 1972 guidelines  
20 were issued. Could you tell me whether Arctic Gas  
21 had meetings with the Government of Canada prior to  
22 the issuance of the '72 guideline, at which time  
23 the question of the Arctic Gas route was discussed or  
24 considered?

25 MR. MARSHALL: Could we  
26 have that reference to Mr. Dau's evidence, Mr.  
27 Anthony, please?

28 MR. ANTHONY: He said it in  
29 two different places.

30 MR. MARSHALL: I may be



1 mistaken, but my recollection was that there was  
2 evidence given by Mr. Williams as to meetings with  
3 representatives of the Government and the various  
4 groups that were interested in proposals to build  
5 gas pipelines and I think also an oil pipeline.  
6 At that time the work -- the Northwest Project  
7 Group had a pipeline on the west side of the river.  
8 It subsequently was moved to the east side.

9 MR. ANTHONY: I apologize,  
10 Mr. Commissioner, to you and to the Inquiry, but I don't  
11 have that exact reference at my fingertips, though,  
12 I -- perhaps I could for the moment I could look that  
13 up and give that specifically to my friend as far  
14 as Mr. Dau's evidence.

15 THE COMMISSIONER: Well,  
16 we have had already marked as exhibits 79 and 80 the  
17 minutes of the meetings in Ottawa of the Mackenzie  
18 Highway subcommittee. They were held on May 5th and  
19 May 18th, 1972, which -- I have those minutes here  
20 if you want to look at them, Mr. Anthony.

21 MR. ANTHONY: I will be  
22 getting to the question of the highway and the  
23 interrelationship between the highway and the pipeline  
24 route and those minutes. What I was directing  
25 my attention to at this stage was to the general  
26 question of route selection which took place as I  
27 understood the evidence, some time in -- by early '72.

28 A If you are asking me --  
29 if the question is whether in making that selection  
30 there was government input into making that selection





1 my answer would be no. That wasn't discussed other  
2 than as stated in my testimony that in  
3 looking at -- we had originally looked at the west  
4 side of the river, and when the Government announced  
5 that they were going to build a highway and we met  
6 pursuant to the minutes that Justice Berger has just  
7 mentioned, we had meetings to see where it was  
8 located, having regard to the fact that the Mackenzie  
9 Valley oil line, at least in their preliminary  
10 studies, had looked at that side of the river, having  
11 regard to the overall corridor concept, all of those  
12 factors were a consideration. The highway was  
13 located on that side, our pipeline -- certainly the  
14 highway, if built, would be advantageous to it,  
15 not only in construction, but more particularly in the  
16 operational phases, the fact that at least the work  
17 that had been done with respect to an oil line  
18 had indicated it on that side of the river, plus  
19 the other reasons given in my direct testimony were,  
20 you know, all combined in our decision in selecting  
21 the east side of the river, if that is helpful to you.

22 MR. ANTHONY:

23 Q Well, it is and  
24 I will get to that in a moment, but I would direct your  
25 attention now just to the lateral from Alaska to the  
26 Mackenzie Delta --

27 A Yes.

28 Q And that corridor and  
29 I am just wondering whether or not Arctic Gas advised  
the Government of Canada of its proposed route across



1 the north slope prior to issuance of the '72  
2 guidelines

3 A I honestly can't recall  
4 whether we did it or not. They were probably aware  
5 from discussions that we had on the whole project from  
6 time to time with the regulatory bodies, etc., that  
7 we were contemplating such a routing. I expect they  
8 were -- I know of no specific meetings set up for  
9 that purpose or discussion.

10 Q But your advice  
11 though is that they were aware of the general routing  
12 that you proposed across the North Slope prior to  
13 their establishment of the guidelines in June of '72?

14 A I think so. I can't  
15 be sure of that. I suspect so.

16 Q Is Arctic Gas presently  
17 or has it had any meetings with the Government of  
18 Canada about the acceptability of the cross delta  
19 alternative ?

20 A No.

21 Q You have no indication  
22 from the Government of Canada then as to whether or  
23 it  
24 not/is prepared to consider the cross-delta alternative?

25 A We certainly don't.

26 Q Now, let's go back then  
27 to the valley itself. Would I be fair in summarizing  
28 your evidence which goes at it in some length about the  
29 highway, in particular in stating that the Mackenzie  
30 Highway would be of assistance, but it is not essential  
to the construction of your pipeline proposal.



1  
2 A Yes.

3 Q Though of course you  
4 would admit that logistically you do require a  
5 highway or similar access as part of  
6 your construction plan?

7 A Well, you don't  
8 require the highway. It makes the movement of  
9 materials easier once you are off the river,  
10 etc., you can use that highway to quite an extent.  
11 Without it there would be undoubtedly more access  
12 roads on to the right-of-way itself and then of  
13 course we intend to operate on snow roads.

14 Q Have you done any  
15 studies in Arctic Gas to indicate how much resources  
16 or time would be saved if there was a Mackenzie Valley  
17 Highway as compared to the situation where there wasn't  
18 a highway constructed?

19 A I don't know, we may  
20 have, I just don't know.

21 Q Could you find out?

22 A I know that our original  
23 plan did not contemplate a highway, in other words,  
24 we think that project can be built without a  
25 highway. With the highway we think it has advantages  
26 both from a construction, logistical and operational  
27 standpoint once in being.

28 Q But your planning is  
29 to proceed along the route and in the time frame that  
30 you have outlined without the existence of a  
highway up the Mackenzie.





V. L. Horte  
Cross-Exam by Anthony

1 A We would proceed on  
2 our proposed timetable if everything else fit.  
3 The highway would not be a factor that would  
4 deter us from moving ahead, awaiting its completion.  
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V.L. Horte  
Cross-Exam by Anthony

1 Q Well then, perhaps, Mr.  
2 Horte, at some subsequent time you could see whether  
3 such a study has been done, and if so perhaps you  
4 could provide it or table it at some later date.

5 Is Arctic Gas currently  
6 having discussions with the Government of Canada about  
7 the construction of the Mackenzie Valley Highway?

8 A Not to my knowledge.

9 Q Well, would you not know  
10 whether or not your company was having these meetings?

11 A Well, there are a great  
12 many people, and I know that meetings have been held  
13 with the Highway Department from time to time to see  
14 particularly with regard to routing, or where we might  
15 be crossing that facility. I don't know of any  
16 specific meeting dealing with when they intend to  
17 complete that project. That doesn't mean to say that  
18 in normal discussions or business relationships that  
19 someone in our group may not have gathered some  
20 information in that area on expectations, but I know  
21 of no such, it's never come to my attention, let's  
22 put it that way.

23 Q Well, the question was  
24 a little more specific as to whether or not there  
25 were on-going meetings much like those described in  
26 Exhibits 79 and 80 which we referred to, and were  
27 meetings of the Mackenzie Highway Sub-Committee; and  
28 you're not aware of whether or not this committee is  
29 operating or whether there are meetings at present  
30 going on?



V.L. Horte  
Cross-Exam by Anthony

1 A No, I'm not.

2 Q Thank you. I would like  
3 to refer you then to the minutes that are found as  
4 Exhibits 79 and 80 in these proceedings, which are  
5 the minutes of the meetings between members of the  
6 pipeline industry, if I may say that, and the Government  
7 of Canada.

8 A Yes. I don't have a copy  
9 of those.

10 Q I believe I asked Miss  
11 Hutchinson to supply you. Thank you.

12 A Yes, I do now, thank you.  
13 MR. ANTHONY: Do you have a  
14 copy, Mr. Commissioner?

15 THE COMMISSIONER: Yes.

16 MR. ANTHONY: Q Now, I refer  
17 you then to the minutes of the meeting of May 5, 1972.

18 A Yes.

19 Q And it indicates there  
20 that at that meeting were Mr. Lee Hurd, Mr. Gordon  
21 Walker, Mr. Bruce, and Mr. Doug Rowe, and are all  
22 these gentlemen associated with Arctic Gas or pre-  
23 existing companies?

24 A No, at the present time  
25 Mr. Walker and Mr. Bruce are not associated with  
26 Arctic Gas.

27 Q So their presence there  
28 was on behalf of Arctic Gas prior to the amalgamation  
29 then?

30 A No, no, they left our



V.L. Horte  
Cross-Exam by Anthony

1 employment subsequent to the amalgamation. In other  
2 words, they worked for the combined consortium, or  
3 our Northwest Project, Gas Arctic Study Group for some  
4 period of time, and then have gone their separate ways  
5 from that project over the last year or so.

6 Q At the time of these  
7 meetings in May of '72, though, they were representing  
8 Arctic Gas?

9 A Yes, they were.

10 Q Now, according to these  
11 minutes, Mr. Hunt on behalf of the Government of  
12 Canada -

13 A Oh, maybe I stand correc-  
14 ted on that. The group was not formed until June  
15 of '72, and if this meeting took place in May, then  
16 Mr. Walker and Mr. Bruce at that time were both with  
17 Gas Arctic Systems. The amalgamation had not yet  
18 taken place.

19 Q So again we've got it  
20 established, though, that they were members of either  
21 of the two sister groups that amalgamated to form  
22 Arctic Gas?

23 A Right.

24 Q Now, I refer you to the  
25 second page of those minutes, and it indic-  
26 cates there that Mr. Hunt on behalf of the Government  
27 of Canada expressed the government's desire to locate  
28 the proposed Mackenzie Highway in such a manner as  
29 it would be of benefit to the pipeline. Now did  
30 Arctic Gas planning from this period of time in





V.L. Horte  
Cross-Exam by Anthony

1 May of '72, proceed on the basis then that the Mac-  
2 kenzie Valley Highway would be constructed in a  
3 manner of benefit to its construction plans?

4 A Could you tell me the  
5 particular section you're referring to?

6 MR. MARSHALL: It's the bottom  
7 of the first page. Exhibit 79.

8 MR. ANTHONY: The very first  
9 line on the last section.

10 "Mr. Hunt expressed the government's desire  
11 to locate the proposed Mackenzie Highway in  
12 such a manner that it would be of benefit to  
13 the pipeline."

14 And my question was whether the planning of Arctic Gas  
15 at that time proceeded on the basis that the Mackenzie  
16 Valley Highway would be constructed in a manner that  
17 would be of benefit to their construction plans?

18 A I think primarily the  
19 consideration at that time was in the routing area,  
20 recognizing, of course, that routing in the proximity  
21 of the highway would be beneficial in the construction  
22 plan.

23 Q O.K., I'll take that up  
24 in a moment, but I'll refer you before I proceed to  
25 a further quote on that page, and that's about half-  
26 way through just above the section which is about  
27 the third time Mr. Hunt's name is underlined and  
28 says as follows:

29 "Mr. Hunt indicated that once the highway  
30 route had been selected that it would



V.L. Horte  
Cross-Exam by Anthony

1           probably dictate the pipeline location at  
2           least to the Sans Sault Rapids on the  
3           Mackenzie River.       In view of this he  
4           hoped the government in its discussions  
5           with the pipeline consortium would find  
6           mutual agreement on location."

7                               Now, did you come to such  
8           mutual agreement?

9                               A       I can't answer that  
10          question, and I think there has probably been a great  
11          deal of testimony on that by people who were actually  
12          involved in the meeting. I wasn't, so I just can't  
13          answer your question.       I think we have people who  
14          were there who could respond to that far better than  
15          I could.

16                              Q       Well, as a matter of  
17          fact we haven't had very much discussion of that, the  
18          view being that       the       matter of route selection  
19          was ultimately a decision of Arctic Gas and one of  
20          policy, and I'm wondering whether you would be able  
21          to enlighten us since these people represented Arctic  
22          Gas at the time?

23                              A       I can't enlighten you  
24          any more than I have.       There are people still in the  
25          organization that undoubtedly can, if they haven't  
26          already done so.

27                              Q       Well, do I understand  
28          then that any questions    about Arctic Gas policy as  
29          it relates to its proximity to the highway are to be  
30          directed to someone else?



V.L. Horte  
Cross-Exam by Anthony

1 A Well --

2 MR. MARSHALL: Well, Mr.

3 Anthony, you can certainly direct a question of that  
4 type to this witness, if you want to know whether the  
5 policy reasons, a particular route or alignment in a  
6 particular area was selected, ask Mr. Horte.

7 THE COMMISSIONER: Well, let  
8 me see if I understand this. You are telling us,  
9 Mr. Horte, that so far as an agreement where you as  
10 president of Arctic Gas sat down with representatives  
11 of the Government of Canada and said, "All right,  
12 let's draw the line on the map, this is it. We  
13 agree? Right."

14 You are saying there was no  
15 summit meeting of that kind, is that what I'm to take  
16 from what you said?

17 A That is correct.

18 MR. ANTHONY: Q Well, Mr.  
19 Horte, you were ultimately responsible for the selec-  
20 tion of the route.

21 A Overall responsibility  
22 with the advice of a great many other responsible  
23 people and experts who studied these matters in detail,  
24 yes.

25 Q Right, but you then had  
26 to determine the location of the route, the ultimate  
27 decision came down to you.

28 A Well, based on that  
29 advice and the advice given, yes.

30 Q And what advice were you





V.L. Horte  
Cross-Exam by Anthony

1 given about the relationship of the highway to the  
2 pipeline route?

3 A Well, just basically that  
4 our routing on the east side of the river had been  
5 discussed with the highway officials to see whether  
6 there were conflicts between our routing and the  
7 highway, and how these might be resolved so that the  
8 two wouldn't present difficulties either in terms of  
9 environmental concerns or construction concerns, and  
10 that we weren't crossing the highway every few miles.  
11 This type of thing, but it was that sort of a more  
12 detailed discussion that I understood took place. It  
13 didn't basically decide our routing, but our routing  
14 was influenced, I suppose, in certain areas by the  
15 location of the highway.

16 Q Well, how was your  
17 routing influenced by the location of the highway?

18 A Well, as I say, someone  
19 else can go into more detail, but I suspect from what  
20 I've heard that there were situations where our rout-  
21 ing and the highway routing might have resulted in  
22 many crossings of the highway, and in that situation  
23 it was mutually worked out that either we shifted or  
24 the highway was shifted, and we came by what was a  
25 better situation for both of those facilities. They  
26 were discussed.



V.L. Horte  
Cross-Exam by Anthony

1 Q At the time the route  
2 was selected Arctic Gas had information on the  
3 expected location of the highway did it not?

4 A I don't know how  
5 specific that information was and I suspect that is  
6 what the meetings were all about, to compare these  
7 locations to see where there were conflicts and how those  
8 might be resolved.

9 Q And was it the decision  
10 of Arctic Gas then to follow the highway as closely  
11 as possible or where it was possible?

12 A I think where all  
13 other things are equal, that that would be the  
14 natural thing to do, yes. But there are other  
15 considerations: Environmental, terrain, construction  
16 problems, etc., all had to go into those  
17 judgments. The highway was one of them.

18 Q Would I be right in  
19 suggesting that sections of the pipeline route  
20 were decided by the location of the proposed  
21 highway?

22 A Would you repeat that  
23 question?

24 Q Were sections of the  
25 pipeline route, location of the pipeline route at  
26 various sections along the line decided by the location  
27 of the highway?

28 A They may have been  
29 or influenced by it. Somebody else will have to  
30 give you the details.



V.L. Horte  
Cross-Exam by Anthony

1 Q Who would know  
2 that?

3 A Our people who were at  
4 those meetings.

5 Q So if we wanted to know  
6 how much, if any, the highway location influenced  
7 the location of the pipeline, we would have to ask  
8 Mr. Hurd or someone of that sort who was at the  
9 meeting?

10 A yes.

11 Q And nothing from  
12 these meetings came back to you when you had to  
13 make the final decision?

14 A Only on a broad basis  
15 that they were working out the best plan that they  
16 felt possible having regard to the location of the  
17 highway and the location of the pipeline. It seemed  
18 like a very reasonable approach to me to work  
19 with the people to try and overcome any difficulties.

20 Q So the influence of the  
21 highway on the location of the gas pipeline route  
22 was determined at the Northern Engineering stage,  
23 rather than at the Arctic Gas stage?

24 A Well, Arctic Gas  
25 people were directly involved and supervising  
26 Northern Engineering Services, so they had all the  
27 same inputs.

28 Q But these people are  
29 representing Arctic Gas, not Northern Engineering.

30 A Which people?



1  
2 Q The people who were at  
3 these meetings with the Government.

4 A Yes.

5 Q The people who had  
6 got the information about the location of the  
7 highway and then told you the highway route should  
8 be amended or shouldn't be amended.

9 A Yes, and I am sure as  
10 they went through it they were being advised and con-  
11 sulting with N.E.S. all the way through.

12 Q But these people at the  
13 meeting were from Arctic Gas and you are here  
14 representing Arctic Gas.

15 MR. MARSHALL: Well, Mr.  
16 Anthony, perhaps I could clarify it a little bit.  
17 We are looking at exhibit 79 which refers to a meeting  
18 on May 5th, 1972, and you will see that the minutes  
19 indicating who was present list representatives from,  
20 among others, the two projects that had at that  
21 point in time not yet merged. Now, among them for  
22 example are Lee Hurd, Northwest Project; Gordon Walker,  
23 the Gas Arctic Project; and so on -- there are other  
24 names for each of those groups.

25 Northern Engineering Services  
26 did not exist at that time. Perhaps there is where some  
27 of the confusion lies. We had the situation where  
28 there was the Northwest Project and there was Gas  
29 Arctic Systems Project and Mr. Hurd and others were  
30 there from the Northwest Project and Mr. Walker and others





V.L. Horte  
Cross-Exam by Anthony

1 there on behalf of Gas Arctic Systems.

MR. ANTHONY: I appreciate  
3 that, Mr. Commissioner. I don't think that is the  
4 problem at all, the problem as I see it is that  
5 we have representatives of Arctic Gas or its pre-  
6 existing companies who were attending meetings  
7 with the Government with the purposes of coming  
8 to an agreement as to the location the highway  
9 vis a vis the pipeline route, and Mr. Horte is  
10 here on behalf of Arctic Gas to explain how route  
11 selection was made and it would seem to me that  
12 if you have Arctic Gas people at a meeting  
13 talking about route selection and we have  
14 Mr. Horte here representing Arctic Gas talking about  
15 route selection, that information should be available.  
16 Now, if it is not I am prepared to suggest that  
17 Mr. Horte inform himself and we can return and  
18 discuss this at a later date.

19 THE COMMISSIONER: What

20 -- Yes, Mr. Scott.

21 MR. SCOTT: Yes, Mr. Commis-  
22 sioner, perhaps I don't understand having just  
23 arrived on this morning's plane, but I thought Mr.  
24 Horte had answered the question in the  
25 sense that he said that he outlined the purpose  
26 of the meeting as he understood it from the point  
27 of view of his people to avoid conflicts and so on  
28 and avoid crossing the route three times. Now, that  
29 may be an answer that is not entirely satisfactory  
30 to Mr. Anthony in the sense that he is looking for



V.L. Horte  
Cross-Exam by Anthony

1 another one which he may be able to get from  
2 some other witness, but is the problem not that  
3 Mr. Horte has answered the question, and that is  
4 as far as we can go with this particular  
5 witness.

6 THE COMMISSIONER: Well,  
7 I think there is a lot in what Mr. Scott says.  
8 I don't see how you can expect Mr. Horte to in  
9 know everything that has gone. As far as the process of  
10 route selection so far as we have been advised at  
11 this Inquiry through witnesses from Arctic Gas  
12 is a process that we must take it was ongoing and  
13 many people were involved. Insofar as the highway  
14 is concerned, many people from the Government  
15 of Canada and from Arctic Gas were involved. You  
16 could call everybody at that meeting, I suppose  
17 and follow the process of route selection backward  
18 from that meeting and then forward from that meeting,  
19 but where is it all supposed to get us?

20 MR. ANTHONY: Well, Mr.  
21 Commissioner, I propose to go beyond the question of,  
22 which Mr. Horte said which is generally that, yes,  
23 we had meetings and we took<sup>it</sup> into account when we  
24 decided on route selection, but the question then  
25 is how did you take it into account and I think that  
26 that would be very much of a, if I could say, a  
27 policy decision to a certain extent -- "Yes we will  
28 follow the highway as we understand its location,"  
29 "No, we will not because of the other considerations"  
30 and so on, and I am anxious to know how the



1 route was affected.

2 THE COMMISSIONER: Well,  
3 you are anxious to know whether the Government decided  
4 to put the highway -- to build a highway on the  
5 east side of the river and they obviously did decide  
6 that, but did they decide to do that before Arctic GAS  
7 decided to put the pipeline on the east side of the  
8 river. Is that the kind of thing you are driving at?

9 MR. ANTHONY : Yes, that  
10 is the sort of question that I propose to get  
11 into too, but it would seem to me that the answering  
12 of that question is in the same category as the ones  
13 that I have been trying to get now as to what sections  
14 of the route were amended. I am interested in knowing,  
15 for example, whether a particular section of the  
16 route was amended as a result or did they say we are  
17 going to go this way no matter which way the highway  
18 goes and so on.

19 Now, that would seem to  
20 me, would be the decision that Arctic Gas would  
21 have to make and that is the sort of question  
22 that I wanted to get into.

23 THE COMMISSIONER: Well, I  
24 think it is reasonable to proceed along the lines that  
25 you have outlined in the sense of determining whether  
26 it was the government that first chose to go along  
27 the east side and if that is so, was that the  
28 principle reason that Arctic Gas went along the east  
29 side instead of the west side, though Mr. Horte  
30 himself did discuss that last time he was here, related





V.L. Horte  
Cross-Examined by Anthony

1 to condition of the terrain, the highway itself, gas  
2 discoveries on the southwest side of the delta  
3 turned out to be disappointing, I don't know what  
4 else he can tell us, but go ahead, ask a few more  
5 questions along this line and let's see if it  
6 gets us anywhere.

7 MR. ANTHONY: Well,  
8 Mr. Commissioner, I am concerned that, you know,  
9 we are going to get into the same box.  
10 What I really would like to do and perhaps Mr.  
11 Horte can advise me whether he is informed to proceed  
12 on this basis is to determine what sort of considerations  
13 with respect to the highway that they considered  
14 in determining their route selection. Now, they discussed  
15 -- they said in general terms, we took into considera-  
16 tion terrain, evaluation by Dr. Mollard, we took  
17 into consideration geotechnical problems and I am  
18 suggesting that in the question of route selection  
19 they also took into consideration government directives  
20 and secondly government decision as to the routing  
21 of the highway and I want to know some more information  
22 about how the question of the location of the highway  
23 affected the route. Not merely saying that yes,  
24 the location of the highway was relevant and we  
25 did consider it, which I think I got, but the  
26 question of how the route was amended, changed or  
27 varied as a result of the government's location of the  
28 highway, and that information was Arctic Gas,  
29 not Mr. Dau and the others who gave evidence about  
30 the other particulars that went into the decision



V.L. Horte  
Cross-Exam by Anthony

1 of the location of the pipeline route.

2 THE COMMISSIONER: Well,  
3 Maybe -- this is obviously important to you.  
4 Maybe we could adjourn until this afternoon and  
5 Mr. Marshall, you and Mr. Horte might, though he is under  
6 cross-examination, I have no objection to this, might  
7 confer and see if you can assist us in any way.  
8 Mr. Horte does not have all of these details  
9 at this fingertips, he doesn't and there is the  
10 end of it for the time being, but --

11 A I don't know if it  
12 would be of any help sir, if I stated this that  
13 I am certainly convinced from a policy standpoint  
14 that whether the highway were built or not, that  
15 our selection would be for the east side of the  
16 Mackenzie River.

17 Q What if a highway  
18 had been built on the west side?

19 A We would have had  
20 to give it further consideration, sir.

21 Q Was the decision made  
22 by the Government to build the highway on the  
23 east side of the river before you had decided which side  
24 of the river you were going to build a pipeline on?

25 A I think so, sir.  
26 There were two groups at that time and I think to the  
27 best of my recollection the Gas Arctic Systems had  
28 already selected the east side. We were in the  
29 process, in the Northwest Project Study Group that  
30 I was associated with at that time, in looking at



1 both sides, we had originally gone with the west  
2 side but were seriously considering the east side.  
3 That is the best of my recollection of the  
4 status of things at that time.

5 MR. ANTHONY: Well, I guess  
6 it doesn't do much good to go through the mill  
7 again, so perhaps I could meet with Mr. Marshall and  
8 Mr. Horte over the recess and determine an appropriate  
9 way of pursuing this line.

10 THE COMMISSIONER: All right,  
11 it might speed things along and if you don't mind,  
12 Mr. Marshall, it might --

13 MR. MARSHALL: We will  
14 accept his offer to buy, sir.

15 THE COMMISSIONER: And  
16 how would it be if we adjourned, then, Mr.  
17 SCott.

18 MR. SCOTT: 2 o'clock.

19 THE COMMISSIONER: Until  
20 2 o'clock. Until 2 o'clock then.

21 (PROCEEDINGS ADJOURNED)  
22  
23  
24  
25  
26  
27  
28  
29  
30



V.L. Horte  
Cross-Exam by Anthony

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. ANTHONY: Mr. Commissioner,  
at your request or in fact urging, I did meet with  
Mr. Marshall over the noon hour and I guess we probably  
agreed to disagree and were unable to resolve a few  
specifics which I'm hopeful will be resolved at either  
the corridor phase or subsequently, and it appears that  
Mr. Horte will not be able to advance a few of the  
particulars I will be concerned with.

Perhaps in fairness to you  
I should indicate how we got launched into this dis-  
cussion, and also so my friend can sort of refer back  
and we'll know what we're disagreeing about.

In Volume 16, page 1853 and  
following there was a discussion between myself and  
Mr. Williams about government direction, about the  
location of the route vis a vis the highway and so  
on, and he stated then at page 1855, following, this  
discussion about the inter-relationship, that -- the  
question was:

"Can this panel on behalf of Arctic Gas tell  
us what route they selected? I have assumed  
that if there were any guidelines, instructions  
formal or informal by the government on route  
selection, this panel would know about it."

And Mr. Williams is saying at the top of page 1858:

"None of this was done within Northern  
Engineering. I can't speak for Arctic Gas."

So there is the thrust of where we were going, and  
it was to determine whether anyone could speak for





V.L. Horte  
Cross-Exam by Anthony

1 Arctic Gas with respect to that point.

2 Now I believe -- I don't have,  
3 of course, the transcript on the discussion, but I  
4 perhaps can confirm this with Mr. Horte, that I believe  
5 I have his evidence, in any event, that he's not  
6 aware of any government direction with respect to the  
7 route selection and the alignment of the highway and  
8 the pipeline route.

9 A That is correct.

10 MR. ANTHONY:

11 And where we're left  
12 then, is the question of whether there is anybody else  
13 within Arctic Gas that can enlighten us as to whether  
14 there was this sort of direction, and what the direc-  
15 tion was, and also with respect to the question of  
16 whether there was<sup>at</sup> the time the route was selected,  
17 whether there was the possibility of the highway  
18 changing and so on. So there is the dispute set out  
19 and I'm hopeful that perhaps I can meet again with  
20 Mr. Marshall at some subsequent time and perhaps be-  
21 fore the corridor evidence to see whether we can  
22 agree on how this evidence can best be obtained, if  
23 in fact it is available through witnesses on behalf of  
24 ARctic Gas.

25 MR. MARSHALL: Well, sir,  
26 I think perhaps just a general comment. On checking  
27 briefly over the break, this question of the inter-  
28 action between the Arctic Gas people who were con-  
29 cerned with route location and representatives of the  
30 government was canvassed at very considerable length  
by Mr. Anthony at that reference that he gave on the



V.L. Horte  
Cross-Exam by Anthony

12th of March, and again on the 13th of March, and later by Mr. Bayly, and so on. I think everybody had a crack at it. I really don't think there is a great deal that anybody in Arctic Gas could add to it. It seems to me that Mr. Anthony may be looking for something that simply isn't there at all, and I think we have put forward the people who were involved in working out the conflicts that developed between the route chosen for the pipeline and the route selected for the highway. They have given evidence about that. We've put into evidence the minutes of the formal meetings that were held, and sir, I don't really think we can be much more help than that.

MR. ANTHONY: Well, I guess there is the question as to -- really I guess we're really trying to get someone to come to terms with that problem, but as I say, I think it's something that we're not going to be able to resolve now, and I'm hopeful that as we get into the corridor evidence that we will have the opportunity of assessing these sort of inter-relationships with other systems, including the highway.

Q But I would like to deal with a few questions that I understand Mr. Horte would be able to comment on, and Mr. Horte, I would ask you to direct your mind now to the period of May, 1972, and could you tell me -- this is, of course, prior to the amalgamation of Northwest and Canadian Arctic Gas systems -- could you tell me at that period of time what routes were contemplated by the two groups



V.L. Horte  
Cross-Exam by Anthony

1 down the Mackenzie Valley?

2 A Well, my best recollection  
3 of that is that the Gas Arctic Systems group had elected  
4 or opted for a route down the east side of the Mackenzie,  
5 the Northwest Project Study Group, who had originally  
6 been looking at a route on the west side of the river,  
7 had under serious consideration whether or not that  
8 was a preferable route as compared to the east side.  
9 In other words, there were beginning to be in their  
10 minds certain doubts with respect to the west side  
11 for a number of reasons, as I testified to, and they  
12 were in the process of evaluating further the east  
13 side location. The actual -- on or about, and I  
14 can't be specific whether it happened before the  
15 actual merger or at about the same time of the merger,  
16 as the merger, in any event the combined group made  
17 the election to go on the east side, for the reasons  
18 that I have stated.

19 Q Now, do I understand  
20 from what you said earlier that during this period  
21 of May '72 it was the understanding of the two groups  
22 that the highway would be located on the east side  
23 of the Mackenzie?

24 A That's my understanding  
25 of the situation. The highway had been announced, I  
26 think, prior to that, and maps made public showing it  
27 on the east side of the river.

28 Q And any information that  
29 came to you did not indicate that the location of the  
30 highway was a variable as compared to east or west?





V.L. Horte  
Cross-Exam by Anthony

1 A Not to my knowledge, sir.  
2 I think it was taken for granted that it was the east  
3 side, that's where the communities are, and it would  
4 in any event seem like the logical location for a highway.



Q Now, you state that the decision then to go on the east side was made following the amalgamation. Can you give us anymore definite time as to when the decision was made by the amalgamated company to decide on the east side?

A I can't it would be somewhere within the period of one to three months of that May date.

Q And you were involved in that decision then to finally go onto the east side?

A Yes, I was.

Q And as I understand your evidence earlier, the location of the highway which you understood to be on the east side was one of the factors that you considered in making that determination.

A     It was a factor.

Q Was it the determining factor between the east and west side?

A        No, I don't think it was. I stated earlier this morning that in my opinion if a highway -- if there were no plans for a highway, I think the decision nevertheless would have been made to locate on the east side of the river for the other reasons stated. Certainly with the highway there there was an added reason.

Q Now, Mr. Commissioner,  
also this morning I referred to my understanding of the  
evidence of Mr. Dau that the Pipeline route had been



V.L. Horte  
Cross-Exam by Anthony

1 selected prior to the issuance of the 1972 pipeline  
2 guidelines and I couldn't find the reference and I  
3 have it now, and it is in Volume 16 of these  
4 proceedings, page 1857 and 1858, and it is my question  
5 which starts at the bottom of 1857 goes on:

6 "Q Am I correct then in assuming or  
7 stating that Arctic Gas from the time  
8 of issuance of the guidelines concentrated  
9 its route selection within the two broad  
10 corridors defined."

11 And Mr. Dau said in answer:

12 " A route was essentially fixed before the  
13 guidelines came out. There have been refinements  
14 since then."

15 Now, that was in the context of the corridors  
16 across the north slope indicating that  
17 they had been fixed prior to June of 1972. Now,  
18 your advice to me now suggests that they  
19 decision to go either on the east side or the  
20 west side of the Mackenzie was made one or two months  
21 after June of '72, is that?

22 A After May '72.

23 Q May of 1972.

24 A I think that is about  
25 the time, yes. I would put it in the time period  
26 of one to three months.

27 Q So Mr. Dau's  
28 evidence indicates that the lateral routes were  
29 decided on before -- or at least the lateral from  
30



1 Alaska to the Mackenzie was decided on before the  
2 issuance of the '72 guidelines, is that your  
3 understanding also?

4 A Well, yes, I think that  
5 that would be the situation because regardless of  
6 whether you went on the west side of the river or  
7 the east side of the river, there is only so many  
8 ways you can come from Prudhoe Bay over to that vic-  
9 inity and I know of no other convenient routes  
10 or fairly direct routes other than the two that  
11 we have shown, one the coastal route and the other  
12 one the interior route which avoids the Arctic  
13 Wildlife Range and those were the two routes  
14 being considered.

15 Q So we agree then with  
16 the evidence that that lateral route was decided  
17 prior to June of '72, that the route down the  
18 Mackenzie Valley, deciding between the east side  
19 and the west side was after June of '72?

20 A That is the recollection  
21 that I have of the matter, yes, sir.

22 Q Thank you.  
23 if  
24 Now, /Mr. Bayly will allow  
25 me perhaps I could ask you just a few questions into  
26 the area of socio-economic matters, if I may.

27 Does Arctic Gas expect that  
28 workers on this project -- in other words,  
29 working on the pipeline will have to be brought in  
30 from outside of Canada as well as from southern areas  
of Canada into the construction area?

A I would expect there would





V.L. Horte  
Cross-Exam by Anthony

1 be some. Certainly our objective is going to be to  
2 try and get Canadians to work on the project. There  
3 may be certain skills where we will have to go outside  
4 of the country and I can't be specific. You know, to  
5 just give you a feel of the situation, I expect there  
6 may be some that will have to come from outside of  
7 the country. I would think the majority will be, by  
8 far the majority, obtained in Canada.

9 Q And would you expect  
10 these workers then to come from the United States  
11 or from further afield than that?

12 A I really don't know,  
13 but I would expect the United States would be the  
14 most logical place, yes.

15 Q Do you expect that  
16 Canadians will similarly have an opportunity to  
17 work on the portion of the line within the State  
18 of Alaska?

19 A I would think so, yes.

20 Q Now, I --

21 A I think, you know,  
22 obviously, the U.S. and Canadian Government both  
23 would want to see as much native -- when I mean  
24 native, I mean native to the country employment as  
25 possible. That is very understandable, but I don't  
26 think, you know, that would be so rigid that it  
27 wouldn't permit people from either country working in  
28 the other.

29 Q So you would expect then  
30 that Canadians would be working in Alaska and



V.L. Horte  
Cross-Exam by Anthony

1 Alaskans would be working on the Canadian lateral?

2 A I would expect there  
3 would be some of each, yes .

4 Q Now, in your application  
5 and in fact in the evidence you have lead to  
6 this Inquiry the issue of Native employment has  
7 been raised and discussed and it would appear  
8 from the evidence that we have had that it is a  
9 policy of Arctic Gas to encourage and to provide  
10 employment for Native Canadians, is that --

11 A Very much, so, yes.  
12  
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V.L. Horte  
Cross-Exam by Anthony

From  
Q /the studies that you

have done is native employment an essential requirement?  
Do you have to draw on native workers, or is it just  
a desirable element of your planning?

A Well, I don't suppose  
it's essential. I think we could do it without their  
involvement. I think it would be a terrible mistake,  
though, from the standpoint of the project and from  
the standpoint of the natives.

Q So native employment  
certainly is a strong policy objective of Arctic Gas?

A Yes.

Q Now yesterday in a  
presentation by the E.P.B., Mr. Gourdeau stated that  
there were no native workers employed on the James  
Bay project, and he suggested that the cause in part  
was the fact that the natives had rejected participa-  
tion in the project pending settlement of the native  
land claims. If I understand your evidence correctly,  
referring to page 5748 in an answer to Mr. Bell, you  
said that that sort of event would not surprise you.  
Is that correct?

A Well, you know, I really  
can't forecast what the attitudes -- the attitude of  
the native people will be. They may decide that  
they don't want to have anything to do with the pipe-  
line. I would be surprised if that were the case,  
frankly, because as you know, we've had a training  
program going now for from three or four years, and  
very active participation by natives, and you know,





V.L. Horte  
Cross-Exam by Anthony

1 there's not much purpose in them being involved in  
2 that matter if they're not looking forward to the  
3 opportunities that may result from it.

4 Q Well, let me go back  
5 and read that section, just so that I understand how  
6 you perceive the situation, and I refer you to Volume  
7 44, page 5747, line 28.

8 "MR. BELL: Q Well, sir, does it surprise  
9 you that native people would reject jobs  
10 on the pipeline project?

11 A No, it does not surprise me.

12 Q Why not?

13 A Well, they may for their own reasons  
14 feel they do not want to see a pipeline  
15 built.

16 Q If that were the case, why would they  
17 do something to co-operate in the building  
18 of that pipeline?

19 A I don't know if that is the situation,  
20 but it could well be."

21 THE COMMISSIONER: Whose  
22 evidence is that?

23 MR. ANTHONY: This is Mr. Horte's

24 THE COMMISSIONER: Oh, Mr.  
25 Horte's.

26 MR. MARSHALL: Was this during  
27 the discussion of Fort Good Hope?

28 MR. ANTHONY: It's following  
29 that discussion.

30 MR. MARSHALL: My recollection,



V.L. Horte  
Cross-Exam by Anthony

1 sir, is that it is within that overall period.

2 A All I can say to you is  
3 it really, I don't think, matters too much what my  
4 opinion is. I think that the native people are the  
5 only people that can make that decision. What we are  
6 trying to do is to make sure that if they wish to,  
7 they're going to have the opportunity to. We think that  
8 that would be beneficial, that's our opinion. They  
9 are going to have to make that ultimate decision.  
10 We have gone to some length to reinforce our inten-  
11 tions in this regard by undertaking training programs,  
12 I think, more extensively than has ever been done in  
13 this area, and we intend to continue with it as long  
14 as natives are prepared to participate in it. We  
15 hope the outcome of that will be that if we get the  
16 permit to build this pipeline, that many natives will  
17 become involved and I think they will.

18 Q But you have strong  
19 evidence, do you not, as a result of James Bay and  
20 Fort Good Hope, at least, that unless there is a native  
21 land settlement there is a strong indication that you  
22 won't have that native employment?

23 A Well, you know, I really  
24 can't see the point. I've tried to tell you what my  
25 opinion is. The natives will have to make that  
26 decision. There isn't anything I can do on this end  
27 that's going to change that one iota. All I can do  
28 is tell you what the intentions of our project are.  
29 Now beyond that I don't know what we're really  
30 gaining.



V.L. Horte  
CrossExam by Anthony

Q Well, I put this suggestion to you, that would you not agree then that a settlement of the native land claims would further your policy objective of ensuring native employment?

THE COMMISSIONER: Well, Mr. Anthony, that's an argument. You're putting an argument to the witness. I don't think this is getting us anywhere. If Mr. Horte gave the answer you wanted to that question, I must say it would surprise me, and I think it would surprise Mr. Horte, and you've made your point. But it's an argument and you're not here to argue with Mr. Horte, but to ask him questions about matters of fact.

MR. ANTHONY: I propose not to argue with him. I propose merely to give him the opportunity that the E.P.B. had of stating on the basis of predicted socio-economic effects, how they can further their policy objectives. Now the E.P.B. in evidence before you indicated that they feel that this issue must be resolved prior to construction to further -- to result in certain socio-economic results, and I am suggesting that there is one consultant to Arctic Gas, and their experience with Northern Engineering at Fort Good Hope and so on, and I merely give the opportunity of that conclusion.

THE COMMISSIONER: Well, you're saying to Mr. Horte, "On behalf of Arctic Gas, don't you think that the policy judgment they made about settlement of native land claims is one that they ought now to reconsider or even go back on?"



V.L. Horte  
Cross-Exam by Anthony

1 Now, that's what you're  
2 asking Mr. Horte, and well, go ahead, let's get his  
3 answer and then we can move on.

4 MR. MARSHALL: What was the  
5 question, Mr. Anthony?

6 THE COMMISSIONER: Well, you  
7 ask the question, Mr. Anthony. Go ahead.

8 MR. ANTHONY: I guess, if I  
9 can avoid any confusion, I may rephrase it to the  
10 extent of saying that would it not further the  
11 policy aim of Arctic Gas to encourage and ensure native  
12 employment to take the position as E.P.B., your  
13 consultant has taken, that the question of native  
14 land claims should be settled and resolved prior to  
15 construction of the Mackenzie Valley Pipeline?

16 A I can't answer that  
17 question. I think the only people that can answer  
18 that question are the natives.

19 THE COMMISSIONER: Well,  
20 there's your answer.

21 MR. ANTHONY: A non-answer.

22 Q Now, in evidence we  
23 had, particularly evidence by Dr. Hardy, the decision  
24 to have a buried pipeline was made early on in the  
25 decision-making structure for this plan. Now can  
26 you recall when the decision to have a buried pipeline  
27 throughout the full length was made?

28 A Well, the concept was  
29 almost immediate, having regard to the terrain we  
30 were going through. I mean it was part and parcel of





V.L. Horte  
Cross-Exam by Anthony

1 the very first discussions about the pipeline, a  
2 refrigerated concept would be the way in which to  
3 go through these permafrost areas. So it's been part  
4 and parcel of it from the beginning.

5 Q Could you give a year?

6 A Well, I guess starting  
7 back in about 1969 when the Northwest Project Study  
8 Group and the Gas Arctic Systems Study Group started  
9 looking at the possibility of a pipeline going up into  
10 the Prudhoe Bay area.

11 Q So the decision to have  
12 buried chilled pipeline through the north was given,  
13 it was provided to Northern Engineering Services when  
14 they started their operations?

15 A Well, it was a concept  
16 which I think would naturally come to mind to any  
17 engineer looking at the problem. Subsequent to that,  
18 as you know, to further verify or demonstrate the  
19 validity of the concept, test facilities were located  
20 at Sans Sault, at Prudhoe Bay, at Norman Wells, etc.  
21 to experiment with how effective this method would  
22 be. As a result of those experiments it's confirmed  
23 our original thinking and the fact that this was a  
24 sound manner in which to construct the pipeline  
25 through this area.

26 Q So the decision -- the  
27 original concept was presented prior to the test  
28 facilities and so on.

29 A Oh yes.

30 Q And these were -- the



V.L. Horte  
C ross-Exam by Anthony

1 purpose of the test facilities were then to verify  
2 this concept?

3 A To verify on the ground  
4 just whether the basic concept was sound, what problems  
5 it would present, etc.

6 Q So the function of these  
7 test facilities then was to examine the concept of the  
8 chilled buried pipeline.

9 A To examine the theoretical  
10 considerations and see from a practical standpoint  
11 if those theoretical considerations were borne out and  
12 that a facility could be designed, using that concept.

13 Q When you made the  
14 original determination that you would go this route,  
15 was there any government opinion or policy communicated  
16 to Arctic Gas either approving or disapproving of this  
17 concept?

18 A None whatsoever.

19 Q So the decision to start  
20 research into this concept of a chilled buried pipeline  
21 originated within the industry,

22 A Certainly.  
23  
24  
25  
26  
27  
28  
29  
30



V.L. Horte  
Cross-Exam by Anthony

1 Q I will move on to  
2 another area then and I refer you to your examination  
3 in chief at page 5546, that is volume 42, and I  
4 refer you -- I will read the section so that you  
5 will have it or we will all have it before us so that  
6 you know what I am discussing.

7 MR.MARSHALL: What is  
8 the volume again?

9 MR. ANTHONY: It  
10 is volume 42, May 21, 1975, page 5546.

11 A Yes.

12 Q Starting at line 26.

13  
14 "The potential of the north slope and the delta  
15 made it seem quite realistic to look forward  
16 in the long run to throughput of 4.5 bcf  
17 per day from each of the producing areas.  
18 This alone justified building in future  
19 capacity but perhaps not to a 48 inch  
20 size on the basis of economics alone. But  
21 there was a further consideration -- the  
22 environmental consideration. Oversizing  
23 in the sensitive northern area would  
24 reduce the necessity of future work  
25 associated with expansion in those  
26 areas. It seemed to us that the  
27 combination of these factors justified  
28 oversizing the supply laterals particularly  
29 since the overall economics of the  
30 project as a whole would support this oversizing."





V.L. Horte  
Cross-Exam by Anthony

1 A Yes.

2 Q Now, could you give me  
3 a ball park figure indicating the relative difference  
4 in cost of constructing the lateral of 42" as  
5 compared to 48" from Travaillant Lake to the  
6 Mackenzie Delta?  
7

8 A I think the difference,  
9 if you sized both supply laterals down to 42",  
10 as against the 48" that they have now been sized  
11 at, would be something on the order of \$150 million  
12 as I recall the figures.

13 Q And if I understand  
14 what you have just said here, that the project  
15 is able to accomodate this increase in cost for  
16 the reasons you have outlined?

17 A Yes, that was the  
18 basis upon which we decided at that time.

19 Q Well, to there I  
20 am happy with you, but let's go on to the  
21 next page, page 5548, again starting at line 25  
22 where you say:

23 "If the rate of discovery in the delta  
24 proved disappointing or if the cost  
25 escalation is beyond our present  
26 expectations which might change that overall  
27 economic consideration, then it could be  
28 desirable to opt for 42" laterals.  
29 For these reasons we felt that an alternative  
30 should be considered by the regulatory  
authorities and this Inquiry in the first  
instance."



1 And I gather from that that you're stating that if  
2 the reserves or costs increase, you will go with the  
3 42" line rather than a 48" is that --

4 MR. MARSHALL: If the  
5 reserves don't increase and the costs do.

6 MR. ANTHONY: Sorry.

7 A I was saying if  
8 we became less optimistic about future reserves in  
9 the intervening period before we go to construction  
10 that would be a factor that might tend you in the  
11 direction of a smaller size, The other factor is  
12 that if our costs escalating significantly from  
13 our present estimates, you would have to look at  
14 whether you could stand that overall oversizing in  
15 the total economics of the project.

16 Q Well, let's assume  
17 for purposes of our further questions, the  
18 question of reserves is settled to your  
19 satisfactin. There is no variation in which you  
20 can anticipate. However, your costs of construction  
21 escalate.

22 A Yes.

23 Q Now, do I understand  
24 it then that should the costs escalate to a significant  
25 level that your intention would then be to  
26 proceed with a 42" lateral?

27 A Well, it will depend  
28 upon the magnitude of those increases. In other words,  
29 if your economics get close with respect to overall



V.L. Horte  
Cross-Exam by Anthony

1 feasibility of the project then I would think you would  
2 be inclined to try and conserve capital in the  
3 initial project and not take that risk on the  
4 future that is associated with oversizing.

5 Q Now, you say they  
6 increase significantly, you are prepared to  
7 absorb \$150 million for this environmental  
8 protection measure, if I may put it that way,  
9 by having a 48" line rather than a  
10 42" to prevent the necessity of returning for looping,  
11 you can absorb 150 million at this stage in any  
12 event?

13 A That was our assessment,  
14 yes.

15 Q And are you able to give  
16 us any assessment of the amount the cost would have  
17 to escalate before you would go for a 42".

18 A No, because it isn't  
19 just cost, it is what happening to the total energy  
20 picture as well at that time. What is happening to  
21 all of the competitive factors that you have to consider  
22 when you are deciding what your overall economic  
23 feasibility is, so you know, you can't do this on  
24 a hypothetical situation, you have to be  
25 faced with the facts at the time and then come  
26 to a judgment decision, all these factors  
27 being considered.

28 Q So if regulatory au-  
29 thority should say that to ensure environmental,  
30 or to assist in the environmental protection by



V.L. Horte  
Cross-Exam by Anthony

1 preventing early looping that you will be  
2 required to put in a 48" initially, you would be  
3 able to live with that or not live with  
4 that depending on the total economic picture?

5 A Yes.

6 I think that you have touched  
7 upon a point that wasn't mentioned earlier, there is  
8 another factor and another reason for showing a  
9 42" is that it has less risk involved and therefore  
10 the initial rates to customers, Canadian  
11 customers and U.S. customers, if additional gas is  
12 not found or the rates not only initially but  
13 in the longer terms would be lower than they otherwise  
14 would. You only get the improvement if in  
15 fact these future reserves aren't developed on a  
16 timely basis, so it may well be that the  
17 regulatory authority who has to approve this  
18 project might decide that they didn't think it  
19 was in the public interest for customers in southern  
20 Canada and in the U.S. to bear that risk. It is  
21 our judgment based on what we see now that that  
22 would be a good risk for them to take, but we may  
23 be second guessed on that.

24 Q Now, we have had evidence  
25 before this Inquiry that the thickness of pipe in  
26 the Alaska portion is greater than the mainline  
27 pipe in Canada. Is that accurate?

28 A Yes, because the codes  
29 in the two countries differ. The pipeline  
30 specification codes.





V.L. Horte

Cross-Exam by Anthony

1 Q Now, if the  
2 Government of Canada or regulatory authority were  
3 to vary their demands so that the same pipe thickness  
4 was required in Canada as in Alaska, would this  
5 still be a viable economic project to proceed  
6 with the 48" pipe?

7 A I haven't before  
8 me what those differences would be. All I can  
9 tell you is what we have used on the Canadian  
10 side conforms with the Canadian codes, the Canadian  
11 codes in my opinion have developed over the past few  
12 years and advanced to a greater degree, frankly than  
13 they have in the U.S. I think that most people  
14 in the industry hope and expect  
15 that if there is variations in these codes it would  
16 be that the U.S. will be varying their codes. We  
17 think that we have made an advancement in Canada in the  
18 code areas as compared to the U.S. Our codes used to  
19 be identical. We have varied ours and changed ours  
20 in light of the experience we have had with  
21 pipelines in Canada.

22 Q Now, would the  
23 difference in pipe thickness, assuming that was  
24 a requirement, make any difference to your ability  
25 to obtain pipe in Canada?

26 A No.

27 Q Let's get into a --

28 A It would just mean  
29 more tonnage, that is all.

30 Q Pardon?



V.L. Horte  
Cross-Exam by Anthony

1 A It would just mean  
2 more tonnage of steel.

3 Q But the source of the  
4 steel would not be varied depending on whether  
5 it was .7, .72 or so on?

6 A No.

7 Q Would the logistice  
8 have to vary do you know?

9 A Well, you would  
10 have to move more tons.

11 Q It would probably be  
12 moved in the same time segence along the same routes  
13 as far was you can tell?

14 A Yes.

15 Q LEt's deal with another  
16 issue again as a policy matter, and I will  
17 draw on your knowledge not only as a member of Canadian  
18 ARctic Gas, but as an officer of Alaska Arctic Gas,  
19 and I am right, am i not, that in the Alaska, or  
20 the American regulatory scheme that a proponent  
21 of the scheme is required to pay for and have  
22 conducted an independant or environmental assessment  
23 before seeking regulatory approval?

24 A I am not 100% sure of that  
25 sir. We did an independent assessment. I do know that  
26 there are some fees that we are paying to the  
27 Department of Interior in the U.S. associated with  
28 their preparing an environmental impact statement  
29 or their review of our application, if you like,  
30 in terms of the environmental impact. There are  
fees paid in that connection.



V.L. Horte  
Cross-Exam by Anthony

1 Q That is precisely the  
2 in the American content.  
3 procedure that I was referring to. Now, does Canadian  
4 Arctic Gas then accept as company policy the  
5 proposition that it is obliged as a proponent of the  
6 scheme to provide and pay for a complete environmental  
7 assessment before seeking regulatory approval?

8 A I would say we live by the  
9 laws of the country we're involved in.

10 Q Well, I'm dealing now  
11 as a concept, as a policy, that a proponent of a  
12 scheme conduct an environmental assessment prior to  
13 regulatory approval of its scheme?

14 A Well, we've done that, and  
15 paid for it, and submitted it to the regulatory  
16 authorities.

17 Q And as a matter of fact,  
18 the Arctic Gas, or the two groups that formed Arctic  
19 Gas, were involved in the creation of the Environmental  
20 Protection Board, is that correct? That's correct,  
21 isn't it?

22 A Yes.

23 Q And I'm right, am I  
24 not, in saying that this was somewhat of a break-  
25 through in environmental assessment, at least as far  
26 as Canada is concerned, and that Arctic Gas, in that  
27 they constituted and funded an environmental assessment  
28 that was both independent and inter-disciplinary?  
29 Is that --

30 A I don't know, I think it  
probably is unique, yes.





V.L. Horte  
Cross-Exam by Anthony

1 Q And Arctic Gas could  
2 be congratulated for this move, I think; but I am  
3 right, though, in saying that this was in fact a  
4 different concept than the usual type of environmental  
5 assessment within the industry.

6 A I think that's true.

7 Q Now, over the last few  
8 days the Environmental Protection Board has presented  
9 its evidence in rather an impressive fashion. Was  
10 Arctic Gas generally satisfied with this technique  
11 of environmental assessment as demonstrated by the  
12 Environmental Protection Board?

13 A Well, we thought that  
14 they were -- their advice and their review of our  
15 plans, the discussions with them were helpful to us  
16 all the way through. That doesn't mean we agreed with  
17 all their conclusions.

18 Q No, I'm dealing now  
19 with the method of environmental assessment and review  
20 that you as a corporate entity find a workable method  
21 and do I understand that in your view this type of  
22 independent environmental assessment is a workable  
23 method of providing --

24 A Well, certainly we've  
25 utilized it. I don't know whether it's -- I wouldn't  
26 necessarily consider it an essential thing in connec-  
27 tion with the project. I think really in the final  
28 analysis what is essential is that you do the funda-  
29 mental work and demonstrate that you've done a good  
30 job. You know, they were one of the tools we used to



V.L. Horte  
Cross-Exam by Anthony

1 ensure that. That doesn't mean that that's the only  
2 way to go.

3 Q I'm somewhat puzzled,  
4 though with the cross-delta alternative and the ques-  
5 tion of looping, for example, have been in your  
6 mind for some time. Could you explain why the cross-  
7 delta alternative or the Fort Simpson alternative was  
8 not referred to either the Environmental Protection  
9 Board or indeed any form of independent inter-disciplin-  
10 ary study group?

11 A Well, I think that we  
12 found that the input from the Environmental Protection  
13 Board had been very helpful in giving us overall  
14 guidance and what have you, in connection with the total  
15 project, and as I was trying to say earlier, I don't  
16 think that that is something that one necessarily has  
17 to continue forever. I think that we found to the  
18 extent that we used them, that they were very useful.  
19 We have not chosen to continue to have them review  
20 all aspects of the project. We brought them up to the  
21 point of reviewing our fundamental routing, our basic  
22 environmental work, etc., and we haven't used them  
23 beyond that point.

24 Q I don't want to deal  
25 specifically with the Environmental Protection Board,  
26 but rather the technique of the independent environ-  
27 mental assessment as a method of environmental review.  
28 I'm wondering why this technique was not employed  
29 beyond the level that it was employed?

30 A Well, I don't think it



V.L. Horte  
Cross-Exam by Anthony

1 essential, if you want my frank opinion, to have  
2 this independent, because you have people, environmen-  
3 talists. are professional people, they are independent  
4 people, they try to do the best job possible. Now I  
5 don't know how many more independent views you need now.  
6 You have public hearings associated with this type of  
7 project where the views of others are expressed, and  
8 all of these are inputs into the situation. I am just  
9 not going to agree with you that it's essential to  
10 have an independent third party working as we had  
11 E.P.B. do in this case. On the other hand I would  
12 say to you that we found the use we made of E.P.B. to  
13 be helpful.

14 Q And you've got no problem  
15 with doing the sort of work that a proponent must do  
16 in operating with and dealing with an independent  
17 environmental assessment.

18 A Would you repeat that  
19 question?

20 Q Well, as proponent  
21 of the scheme you have certain obligations, certain  
22 information you have to obtain.

23 A Yes.

24 Q I'm wondering whether  
25 you have any objection to the use of a technique such  
26 as an independent inter-disciplinary review.

27 A I really don't grasp your  
28 question, I'm sorry.

29 MR. MARSHALL: I've got some  
30 problems too. They used it. They used the E.P.B.



V.L. Horte  
Cross-Exam by Anthony

1 They funded the E.P.B. and the E.P.B. carried out  
2 extensive studies and provided them with advice.

3 MR. ANTHONY: Well, the point  
4 I was getting at is that this technique was employed  
5 and then apparently was not employed on subsequent  
6 matters, and I'm trying to determine whether there is  
7 any reason why you couldn't employ such a technique  
8 beyond the level you have.

9 A Just that we didn't  
10 think it was essential to doing a good job in that  
11 area. We have had a great deal of input from them.  
12 We know their general attitude and the considerations  
13 they feel must be taken into account, in study, and  
14 frankly it is a cost element.

15 Q So perhaps I could put  
16 it this way then, if a recommendation was made that  
17 before you could proceed with an application for  
18 cross-delta or any other major alternative, you would  
19 have to undergo -- or the idea would have to undergo  
20 a study by an independent environmental assessment  
21 team, you would have no problem with that sort of  
22 procedure.

23 A No, I'm not saying we  
24 wouldn't have a problem. Who is going to pay for the  
25 cost of that team, and what's the time involved?  
26 You know, where do you stop?

27 Q So the problem is one  
28 of cost, is it?

29 A Well, you have to assess  
30 whether, in a management role, whether it's necessary





V.L. Horte  
Cross-Exam by Anthony

1 to come up with good environmental input into your  
2 overall consideration. We have come to the con-  
3 clusion that it's not necessary to go further with  
4 E.P.B. than we did. Now if somebody said to me, "You're  
5 not going to build this project unless you have an  
6 independent group involved," they'd have to give me  
7 more than that before I'd say I was going to go ahead.  
8 I'd have to know what it was going to cost me, how  
9 long it was going to take, and assess whether it in  
10 fact was worth the while of this group to continue  
11 in that manner or not.

12 Q O.K. We have also  
13 your earlier evidence where you advised that you  
14 were aware of current treaty negotiations between the  
15 Government of Canada and the Government of the United  
16 States with respect to the pipeline. Now does Arctic  
17 Gas take the position that such a treaty is essential  
18 before it can proceed with the financing and construction  
19 of this pipeline?

20 A I think I answered that  
21 question last week, sir.

22 Q I read through and I  
23 wasn't sure whether you had in fact had that specific  
24 question.

25 A I don't know whether  
26 it's essential. It may be. It certainly would be  
27 helpful in the financing of the project.

28 Q And what sort of issues  
29 would have to be covered by such a treaty to be  
30 helpful, from your point of view?



V.L. Horte  
Cross-Exam by Anthony

1 A Well, I think the funda-  
2 mental issue in connection with the treaty is the  
3 assurance that -- and the treaty involves products  
4 not only moving from U.S. borders through Canada and  
5 back into the U.S., but also a product that would be  
6 moved from Canada, through the U.S. and back into  
7 Canada, and so looking at both sides of that coin,  
8 what both governments are considering is that if they  
9 enter into such a treaty they would want it to ensure  
10 the country moving its product through another country,  
11 that it wouldn't be discriminated against in terms of  
12 taxes, indirect taxes, taxes on the movement of that  
13 product through the other country, that they could be  
14 assured that the volume of products that they in would  
15 come out at the other end and not be taken off on its  
16 way through that country. Those are the two major  
17 considerations.

18 Q Would you feel they  
19 would have to --

20 A They would want to feel  
21 that their product -- they can rest assured that  
22 their product will move through and that it will move  
23 through on a reasonably understandable basis in terms  
24 of cost.  
25  
26  
27  
28  
29  
30



1 Q I'd next like  
2 to discuss with you your policy towards the question  
3 of regulation and design review and your evidence  
4 goes at some length in volume 45 , page 5932 --  
5 5937, but I want to just concentrate on two aspects  
6 of that. It is a rather lengthy passage and  
7 perhaps you could confirm that this in fact is  
8 the two elements that are of importance to you.  
9 Number one, that there be a single form of regulatory  
10 authority overseeing the construction of the  
11 pipeline, and secondly, you are of the view that  
12 the National Energy Board or some committee of  
13 the National Energy Board would probably be the appro-  
14 priate body, -- is that a fair summary of  
15 what you had to say?

16 A Yes. I put the  
17 greater emphasis on there being a single body.  
18 I said in my personal opinion the N.E.B. would  
19 appear to be the logical one since they had a good  
20 deal of the expertise within that regulatory body  
21 at the present time.

22 Q Now, in your view would  
23 such outside regulatory authority also be responsible  
24 for monitoring compliance with Government regulations  
25 and stipulations and enforcement of Government regulations  
26 and so on following the construction period?

27 A Yes.

28 Q So it would be an  
29 ongoing continuing agency rather than one merely  
30 designed for the construction of the line?





V.L. Horte  
Cross-Exam by Anthony

1 A It would seem to me  
2 to make sense or to be an ongoing thing.

3 Q Now, in your view would  
4 such a regulatory authority have to be created  
5 prior to the approval of the construction of  
6 the pipeline?

7 A I don't know that you  
8 have to create it. Maybe it already exists.

9 Q Do I understand your  
10 evidence at an earlier stage that the people  
11 putting up the money want to know who is going  
12 to be supervising before going into the financial  
13 commitment.

14 A Yes, I think they will  
15 want to know how it is going to be regulated.

16 Q So you would think  
17 that the authority should be an operation whether it  
18 needed to be created or not prior to the regulatory  
19 approval to go ahead?

20 A No, I think that  
21 -- well, let me -- I don't know if this is a direct  
22 answer to your question or not, but let me put it  
23 this way, I think it is essential when the permit  
24 is issued and the permit, any permit issued would  
25 only be issued by the Government of Canada, not by  
26 the National Energy Board or anyone else. It would  
27 be issued by the Government of Canada and I would  
28 expect that in issuing such a permit they would  
29 probably designate or spell out this matter of  
30 under whose authority the monitoring, etc., during



V.L. Horte  
Cross-Exam by Anthony

1 construction and the ongoing monitoring would  
2 take place and at least I would say this, that if  
3 that is an unknown question, we won't get financed  
4 until that is known. Until somebody does tell us  
5 who is going to be the authority that we have to  
6 be responsible to.

7 Q So that that question  
8 has to be resolved before the financing can go  
9 ahead?

10 A Yes, and I expect that  
11 it would be resolved before the permit were issued.

12 Q Now, if the N.E.B. were  
13 in fact given this authority would you be able  
14 to view that its personnel in area of concern would  
15 have to be increased dramatically to include the  
16 various environmental and other issues that no  
17 doubt arise?

18 A I know they have  
19 expertise in all these areas, but just looking  
20 at the magnitude of the project, I would think  
21 they would have to add to their staff to  
22 handle something of this size.

23 Q Do I understand you  
24 are following in favour with the N.E.B. because of the  
25 nature of their personnel or is there any other reason  
26 why the N.E.B. --

27 A Well, they are very  
28 familiar with pipelines. They now are the  
29 regulatory authority in connection with the  
30 construction of pipelines anywhere else in Canada and



V.L. Horte  
Cross-Exam by Anthony

1 all of these matters that we are talking about  
2 come under their jurisdiction in normal pipeline  
3 operations now. So that is the fundamental reason  
4 for my being of the opinion that they would be  
5 a logical agency.

6 Q Would it be acceptable  
7 and I am thinking in terms now of your financing  
8 problems if there was one regulatory authority  
9 responsible for all aspects of construction north of  
10 60 and the existing regulatory scheme south  
11 of 60?

12 A You know, I cannot  
13 answer that directly. It would depend upon the --  
14 you are into two different agencies then. It might  
15 be workable since each is a particular part of the  
16 project. It is a difficult question to just  
17 answer categorically. Obviously, the most preferable  
18 thing is one agency.

19 Q Now, would Arctic  
20 GAS find it acceptable if such a regulatory authority  
21 with jurisdiction to supervise, monitor and enforce  
22 were completely separate from any Government department  
23 or Government agency? Perhaps I can be a bit more  
24 specific in saying for example, the creation of  
25 a Mackenzie Valley Pipeline Authority, or something where  
26 people would be seconded but it would be by statute  
27 completely separate from a regulatory agency presently  
28 existing within the government.

29 A Who would it be responsible  
30 to?



1 MR. MARSHALL: Excuse me,  
2 Mr. Anthony, it is really an impossible question  
3 because you -- we have got only a title. We have  
4 no complement, we have no duties, powers, authorities,  
5 anything of that sort. We don't know what legislation  
6 it's created under. I don't know how the witness  
7 can answer that question. Do you constitute the  
8 authority?

9 MR. ANTHONY: I would  
10 if I could, but what I am concerned with is to  
11 determine whether there is, in view of your financing  
12 requirements as you deal with people who are involved  
13 in financing a project, some requirement that it  
14 be part of a government operation, shall I say,  
15 or whether the real key element is that it  
16 be a single agency responsible for dealing with all  
17 these issues that are to be covered.

18 A Who is it responsible  
19 to? Who would this agency be responsible  
20 to?

21 Q Well, let's -- I am  
22 giving you the situation --

23 A Are they just out there  
24 on their own responsible to themselves or to who?

25 Q Oh, I would imagine that  
26 everyone is ultimately responsible to the Parliament  
27 of Canada, I am merely saying that the idea would  
28 be that they would not be responsible to a particular  
29 minister within a particular department, that it  
30 would be responsible merely to the Parliament of





V.L. Horte  
Cross-Exam by Anthony

1 Canada through reports or accountability in  
2 that regard.

3 A I cannot tell you  
4 whether that would be acceptable or not. It sounds to  
5 me that it would complicate things. Anytime  
6 that you don't know where something is directly respon-  
7 sible to it seems to me at leaves all sorts of  
8 room for things not being done, decisions not being  
9 made, and that would concern me, and I think it would  
10 concern the financing, the people putting up the  
11 money for the pipeline.

12 Q I would like to then  
13 direct your question to the relationship of  
14 Arctic Gas to such a regulatory authority, and  
15 perhaps we can do it on the basis of an example and  
16 then proceed to principles from that, but assuming that  
17 there was to be a line break at some period of time,  
18 would you agree then that in normal circumstances,  
19 Arctic Gas would then immediately advise such a  
20 regulatory authority who would supervise the  
21 repair, etc., of such a break, is that how you  
22 see it operating?

23 A Well, that is how it  
24 operates now. If you have a line break you immediately  
25 report it to the regulatory authority, advise them  
26 immediately on the phone the measures you intend to  
27 take and you don't waste five minutes, you get out  
28 there and start doing it.

29 Q And you would feel that  
30 it would be appropriate that such an authority would then



V.L. Horte  
Cross-Exam by Anthony

1 have to approve the remedial measures you propose  
2 to take in a circumstance?

3 A Yes, those measures  
4 are measures that are generally known. You know,  
5 there is only so much you can do under those circumstances  
6 and that is get it fixed.

7 Q I asked you  
8 that question only from something I saw in the  
9 application and I will read the sentence to you  
10 and you can comment if you wish. The Application,  
11 Section 13.b, page 31 under the heading, "Reporting",  
12 provides as follows:

13 "When the line repair is completed and  
14 the pipeline is returned to normal  
15 operation, the District Superintendent will  
16 prepare a comprehensive report for  
17 submission to the Applicant's management  
18 and to the relevant Government agencies."

19 Now, as I check through the rest there is no indication  
20 of such reporting at the time of the break, but a  
21 rather after repair is completed.

22 A That basically  
23 is how it is handled, sir. You don't have time  
24 to go through a lot of reporting when a break occurs,  
25 you get with it and fix it. Now, if for some  
26 reason after having demonstrated all the measures  
27 taken and how it was repaired, etc, that authority  
28 decided that the repair needed further work, they  
29 could shut you down and make you go back and  
30 add sleeves, or cut a section out or do other things,



1                   are  
2 but you know, you/really dealing with a situation  
3 now that is very critical when you have a break and  
4 you really don't have a lot of time for reviewing  
5 these situations with people, you have to get  
6 with it and do it.  
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V.L. Horte  
Cross-Exam by Anthony  
I think,

1 MR. MARSHALL: Mr. Anthony,  
2 you should look at page 29 of that exhibit that you're  
3 quoting from, Section 13-B. You picked up the  
4 section dealing with reporting, which is found on  
5 31. All of this is under "Implementation of Contingency  
6 Plan," which is at the paragraph (d) on page 29,  
7 indicates that they would notify agencies of government  
8 and other parties having a more specific interest  
9 in emergency operations. So I think that point is  
10 covered in the materials that were dealt with by the  
11 O. & M. panel specifically in application insurance.

12 MR. ANTHONY: Yes, I'm aware  
13 of that, Mr. Marshall, but I can still go into the question  
14 of whether or not in relation to a supervisory or  
15 regulatory authority, whether you would feel the  
16 need to appear before this authority before you under-  
17 took remedial measures, or afterwards; and I thought  
18 you had said before, and now I think you're saying  
19 afterwards.

20 A You sure wouldn't appear  
21 before them and have a hearing if that's what you're  
22 saying. When you decide how you're going to go about  
23 it you would advise them, and let them know what you  
24 intended to do. They would be familiar with the normal  
25 procedures to be used. They would send a man out to  
26 the site, I'm sure he'd be right there during the  
27 repair operations, but you know, I think you're --  
28 I don't really understand your point. These things  
29 have always operated very smoothly and we've never  
30 had any problems in this regard in getting things done.



V.L. Horte  
Cross-Exam by Anthony

1 Q Well, I'm sure that  
2 they may very well have operated very smoothly from  
3 the engineering point of view.

4 A No.

5 Q What I'm merely trying  
6 to find out though, is whether as a matter of how  
7 you see this regulatory authority operating , whether  
8 you feel that the notice of the line break should go  
9 to them --

10 A Yes, it always does.

11 Q -- immediately upon it  
12 occurring.

13 A Yes, immediately.

14 Q And before any remedial  
15 measures are taken.

16 A Yes.

17 Q And they would then have  
18 the authority to supervise the remedial process that  
19 you've undertaken.

20 A Well, at the moment, you  
21 know, you're mobilized and you're moving. You let them  
22 know you've got a break and you're starting to fix it.  
23 They normally send people out to watch the operation  
24 as it's going on.

25 THE COMMISSIONER: There was  
26 a report in the paper a day or two ago, Mr. Horte,  
27 about a break at Penticton of a natural gas line.  
28 I don't know whether you saw it. A bulldozer operator  
29 broke the line and he was killed in what was described  
30 as a cloud of dust or something. Does that -- is that



V.L. Horte  
Cross-Exam by Anthony

1 -- have you ever been present when a broken line is  
2 in the process of being repaired?

3 A When it's being repaired,  
4 yes sir.

5 Q Well, I take it that  
6 they couldn't shut that off. I don't want to ask  
7 you about something that you haven't even read about,  
8 but I can't remember which line that would be. Would  
9 that be Westcoast?

10 A No, probably Inland  
11 Natural.

12 Q Inland Natural, yes.  
13 Would -- they must have been able to shut it off  
14 pretty quickly, one would think, but --

15 A You do have a period,  
16 you know, until they get the valves shut in on  
17 either side of the break in which you have gas pouring  
18 out of the break.

19 Q Well, he would be  
20 asphyxiated, presumably,

21 A He might have just  
22 been killed by the shock of the explosion, sir, you  
23 know. It certainly is a <sup>tremendous</sup> shock when it -- if he just  
24 hit it and it broke, he wouldn't have much chance.

25 THE COMMISSIONER: O.K., we'll  
26 adjourn for coffee then.

27 (PROCEEDINGS ADJOURNED FOR FEW MINUTES)

28 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

29 MR. GIBBS: Sir, when I was  
30 going through my calculations with Mr. Horte, it was



V.L. Horte  
Cross-Exam by Anthony

1 obviously difficult for anyone to follow without the  
2 book, or even with the book, and anticipating that  
3 some people might want to look at the numbers, I reduced  
4 my notes to more legible form and made xeroxed copies,  
5 and Mr. Hollingworth has them if anyone wants them.

6 THE COMMISSIONER: Well, I  
7 would like a copy. You mean that I can substitute  
8 that for the notes I took?

9 MR. GIBBS: Exactly.

10 THE COMMISSIONER: Well, I'm  
11 certainly willing to go along with that.

12 MR. ANTHONY: Q Mr.Horte,  
13 I'd like to continue then, our consideration of the  
14 inter-relationship between the regulatory and enforc-  
15 ing body, and the Arctic Gas, the contractor of the  
16 scheme.

17 A Yes.

18 Q And we have dealt  
19 with a number of issues as to how we would inter-  
20 act, and notice and so on. I would ask you whether,  
21 as a matter of policy, Arctic Gas would agree that  
22 the inspector who was on the scene at the time of  
23 any repair, etc., should be entitled to close down  
24 the project or order the remedial measures to be  
25 handled in a certain way, or whether you view this  
26 function as merely observing and reporting to the  
27 regulatory authority?

28 A Well, I think that the  
29 basic approach has to be one in which the basis upon  
30 which repairs will be done in various areas is,





V.L. Horte  
Cross-Exam by Anthony

1 you know, there is a format on the procedure, etc,  
2 that would be used in any possible anticipated circum-  
3 stances, and those are procedures that would be worked  
4 out with the regulatory body.

5 Q Are these what you call  
6 contingency plans?

7 A Yes, these would be  
8 sort of a basic approach to looking after repairs or  
9 pipeline breaks, if you like. Now frankly, my own  
10 opinion is that then if a break occurs, the method  
11 that I know now as being practiced is one of the  
12 pipeline company immediately informing the regulatory  
13 body of the break and its plans in connection with  
14 that break; and simultaneously with that, going about  
15 fixing the break. Certainly the regulatory body send  
16 people out to the break to see what it's all about  
17 themselves, and a report is written following the  
18 break, describing the circumstances, the reasons for  
19 the break, all the metallurgical tests that have  
20 been done and various things so that this can be  
21 assessed for future reference; and of course, if  
22 following the repair of the break any additional  
23 remedial measures are required, why then those can  
24 be taken. I think you really have to recognize  
25 under the circumstances of a mainline break, you  
26 really have to get with it and take action. What you  
27 have is millions of customers on the end of a pipeline.  
28 It may well occur in the middle of winter or some-  
29 thing, and frankly, what you have to do is get  
30 that thing repaired just as fast as you possibly can



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Cross-Exam by Anthony

because it's an emergency situation where a great number of people could suffer very much if it was not handled expeditiously. Now, within that framework, you've got to be able to accommodate to that framework, however you do it. The best way I know to do that is to try and anticipate the situations and have worked out your plan, have those plans fundamentally approved by the regulatory body so when the break occurs you implement that plan just as quickly as possible.

Q So that the key of any recommendations as to how to implement this regulatory review would be that it be able to respond very quickly to a situation.

A Yes.

Q And do I understand what you said too, that these contingency plans would be made available and reviewed at an early stage, and then followed, should that event occur?

A Yes. For instance, in your approval of a project or in the operation of a pipeline, before the regulatory body you must disclose what protective measures you have taken, where your equipment is located. Is your equipment properly spaced, etc., along the route of that pipeline to handle the emergencies that could arise? These are all plans that are reviewed with the regulatory body and in other words you're ready for the situation.

Q Should these contingency plans that you've described be a matter of public record, in your opinion?



V.L. Horte  
Cross-Exam by Anthony

1 A I'm sure they will be,  
2 yes.

3 Q I gather the procedure  
4 you would see then, as long as you follow the contin-  
5 gency plan that you should be able to proceed with the  
6 repair or whatever activity may be involved, without  
7 interference with the regulatory authority at that  
8 time.

9 A Yes, you really don't have  
10 time to have a lot of discussion with people.

11 Q Now, when the repair is  
12 a report undertaken and is made available to the regulatory  
13 body about the break, the repair and <sup>the end</sup> consideration,  
14 would it be your view that it is advisable that this  
15 report be a matter of public record?

16 A I expect all those  
17 reports are a matter of public record if they are filed  
18 with the regulatory body.





1 Q Obviously a very  
2 good answer. I would like to now deal with the  
3 question of compensation for damages as the result of  
4 construction and other activities, and we have  
5 discussed about methods of limiting environmental  
6 and damage as a result of the construction activity,  
7 but you would agree with me that there are what  
8 we call unavoidable damages that are bound to  
9 occur by the very nature of the operation, and I  
10 would like, would you not, and I would like to then turn  
11 to that.

12 A Are you talking about  
13 the normal operation of a pipeline or an emergency  
14 situation?

15 Q I am suggesting the  
16 normal construction of a pipeline.

17 A Yes.

18 Q And I would like to then  
19 deal with these unavoidable environmental damage now,  
20 is it the policy of Artic Gas then to compensate  
21 those who have suffered loss as a result of  
22 these unavoidable damages caused in the construction  
23 of the pipeline?

24 A I think to the extent  
25 that anybody can demonstrate, damages, on this  
26 pipeline, like any other pipeline, certainly the  
27 company will have to compensate people for those  
28 damages.

29 Q Now, I would suggest  
30 to you that compensation can be either in terms  
31 of a cash compensation or in terms of restoring the



V.L. Horte  
Cross-Exam by Anthony

1 lost resource and does it cause, would you be in  
2 agreement with a compensation scheme by a regulatory  
3 authority which would demand a return of the resource  
4 or a repair of the damage to the resource rather  
5 than a cash compensation.

6 A I don't know  
7 what you mean by resource.

8 Q Perhaps I will give  
9 you an example.

10 Assuming the route for  
11 various reasons had to go through a fishing  
12 area that was important to a particular community  
13 and as a result of going through that fishing area  
14 there was a loss of a fishery resource. Now, I  
15 am suggesting -- I am asking, I guess, whether  
16 as a matter of policy you would be prepared to  
17 undertake a restoration of that activity, that  
18 fishing activity by restoring that resource rather  
19 than merely a cash compensation.

20 A Well, it would certainly  
21 be our intention to -- if we were found to be the  
22 cause of the loss of the resource, I suppose if  
23 the resource could be restored, that would be the  
24 best thing that you could do. You know, there may  
25 well be circumstances where that would not be  
26 practical and then the only compensation would have  
27 to be one of money, cash to replace the value of the  
28 resource loss.

29 Q So as a matter of  
30 policy you would suggest that the appropriate.



V.L. Horte  
Cross-Exam by Anthony

1 compensation would be restoration and if not  
2 possible, a cash compensation.

3 A Yes, but I don't  
4 want to be pinned down in this area. This will  
5 be a matter of legal rights of the parties  
6 involved, and you know, we are going to abide by  
7 the laws whatever they are in this regard.

8 Q Well, I would assume  
9 that to be true. I was merely trying to get  
10 your perspective on your obligations in a broader  
11 sense. But let me proceed and deal with that  
12 question then on -- in a more specific sense and I would  
13 like to read to you a couple of paragraphs out of  
14 an agreement involved in the James Bay construction  
15 or the agreement in principle and I would merely like  
16 to get your comments on these terms as to whether  
17 from a policy point of view of Arctic Gas you  
18 find them an acceptable term of agreement.

19 MR.MARSHALL: Mr. Anthony  
20 do you have copies of the document that you  
21 are reading from, are you proposing to  
22 put it in or what?

23 MR. ANTHONY: Yes, I propose  
24 to do that. Mr. Commissioner, there was someone  
25 who was to actually help me in preparation of cross-  
26 examination and provide me with information who was  
27 to come up here and at the last moment neither arrived  
28 with the cross examination nor with the documentation.  
29 It is the agreement in principle and I would like to,  
30 if I would be permitted to merely read the section to



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Cross-Exam by Anthony

1 Mr. HOrte and get his comment on it and then I propose  
2 to file the agreement in principle document at a  
3 subsequent date as soon as it can be made  
4 available.

5 MR. MARSHALL:: Well,  
6 do you want to put it in as part of your case,  
7 is that what your intention is?

8 THE COMMISSIONER: Well,  
9 he -- Mr. Anthony wants to read the passage from  
10 the agreement that he has before him. The document  
11 can be introduced as an exhibit when he is in a  
12 position to produce it, merely to verify the  
13 passages that he intends to read now, we have  
14 got thousands of pieces of paper stacked up over there  
15 and I don't think that anyone takes the position  
16 that the truth of everything that is asserted there  
17 has been established. It is a matter of convenience  
18 more than anything else. So go ahead and read this.  
19 I am not saying that you are entitled to ask Mr.  
20 Horte to comment, but read it and then we will  
21 decide.

22 MR. ANTHONY:

23 Q Yes, what I propose  
24 to read are paragraphs from the agreement in principle  
25 between the Grand Council Crees of Quebec, the  
26 Quebec Inuit Association, the Government of Quebec and  
27 the James Bay Development Corporation and Hydro  
28 Quebec, and it is found in the agreement in  
29 principle, paragraph nine, and this is what the  
30 paragraph reads:





V.L. Horte  
Cross-Exam by Anthony

"The Government of Quebec, and/or  
the James Bay <sup>Energy</sup> Corporation will sub-  
sidize the reorganization of traplines  
of the East Main and Paint Hills  
peoples affected by the Hydro Eelctric  
Project in order to attain the same level  
of subsistence harvesting as at present  
based on the average of the last five years  
subject to equal effort and shall pay  
all justified costs connected therewith.  
Such programs shall include furbearer  
and big game programs, such programs  
shall include Cree salaried workers,  
such programs shall include the  
possibility of co-operatives."

Paragraph H --

THE COMMISSIONER: The possi-  
bility of what?

MR. ANTHONY: Co -operatives.

Paragraph H:

"All costs and expenses contemplated to be in-  
curred by this paragraph nine shall be for  
the account and be paid by Quebec and/or  
the James Bay Energy Corporation."

THE COMMISSIONER: By  
Quebec?

MR. ANTHONY: Yes --

THE COMMISSIONER: And --?

MR. ANTHONY: And/or the  
James Bay Energy Corporation.



V.L. Horte  
Cross-Exam by Anthony

1 THE COMMISSIONER: oh,  
2 and/or.

3 MR. ANTHONY:

4 Q Now, I am asking you  
5 to exercise your mind to the extent of substituting  
6 Arctic Gas for the James Bay Energy Corporation and  
7 not identifying in particular the government,  
8 but I think in that paragraph it conveys a concept  
9 of compensation and a policy by the James Bay  
10 Energy Corporation as to the obligations it is  
11 prepared to accept for restoration of subsistence  
12 trapping and I am asking you merely to comment  
13 on that policy as conveyed in that paragraph and  
14 whether you think that would be an appropriate --  
15 an acceptable type of policy to adopt.

16 MR. MARSHALL: Well,  
17 sir, subject to your ruling on this, it seems  
18 to me that it is very difficult for Mr. Horte  
19 to comment on a policy that has been quoted by Mr.  
20 Anthony that is part of a much longer agreement.  
21 It involves a number of parties. We don't know  
22 what all of the circumstances are, what other  
23 compensations there may have been, what the nature  
24 of the claims were and so on and it seems to me  
25 that it is an impossible task to comment meaningfully  
26 upon it. It may be that this entire area, if it  
27 is one that Mr. Anthony is interested in is  
28 better dealt with when we do get to phase four  
29 or perhaps beyond if he wishes to urge some type  
30 of policy or he wishes to cross-Examine on the



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Cross-Exam by Anthony

1 policies of compensation that ARctic Gas will deal with  
2 could be gone into in more detail at that time.

3 MR. ANTHONY: Well,  
4 am  
5 Mr. Commissioner, I of course/in your hands and  
6 agree that any question could probably be deferred  
7 to a number of stages and I am not suggesting that the  
8 total agreement as entered into be adopted or  
9 commented on. I am merely isolating a particular  
10 philosophy or policy of compensation and am  
11 requesting an opinion on that from Mr. Horte.

12 THE COMMISSIONER: Yes,  
13 well, I think what we will do is this. Mr.  
14 Scott and Mr. Goudge are indicating to me that  
15 the time has come to adjourn because they intend to  
16 hold a meeting of all counsel to discuss the schedule  
17 of the Inquiry over the next two or three months and  
18 I think that it is important that counsel should  
19 go into that.

20 What Mr. Anthony is  
21 doing, in my view, is putting you a notice, putting  
22 Arctic Gas and Foothills for that matter so far  
23 as they enter into the picture, that this is a  
24 proposition they will urge upon the inquiry later on.  
25 I think that you might consider it overnight,  
26 Mr. Marshall and Mr. Horte, and if you have any  
27 comments that you want to make tomorrow, go ahead  
28 and make them. I think that I have a copy of this  
29 Agreement in Principle in my room and I will get it  
30 for you if you want to look at it overnight. I  
think I have.





1 MR. MARSHALL: I would  
2 like to do that, sir.

3 THE COMMISSIONER: Yes.  
4 So, we will adjourn until nine o'clock tomorrow  
5 morning and you can just carry on then, Mr.  
6 Anthony.

7 MR. ANTHONY: Thank you.

8  
9 (PROCEEDINGS ADJOURNED TO JUNE 6, 1975.)  
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